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'It's Important to Know In Time'

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The Newspaper of the Industry

Air Conditioning & REFRIGERATION NEWS

Production Tools for Victory

AN INTERNATIONAL INSTITUTION ★ SUBSCRIBERS ALL OVER THE WORLD ★

Technical Governmental

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'Written To Be Read on Arrival'

Issued Every Monday at Detroit, Michigan

FEB. 28, 1944

Vol. 41, No. 9, Serial No. 780
Established 1926.

Inside Dope

By George F. Taubeneck

Invasion Problems
Then and Now
Naval Poesy

Invasion Problems

Practically any former busboy from continental Europe today qualifies as a military expert, so perhaps nobody should feel any hesitancy in offering amateur suggestions on the probable course of the many invasions which will be led by American troops.

The Nazis hold the European coastline from Norway to Spain. Within the range of our present fighter planes is that stretch of coastal Europe which begins at Emden in northwest Germany and reaches to St. Nazaire on the Bay of Biscay. Counting natural coastal curlicues, this line stretches at least 1,000 miles. The writer has bicycled, motored, flown, or boated the full length and breadth of this invasion springboard, and remembers it fairly well.

After three years of preparation, the Nazis should have been able to make this a thousand miles of very tough going, indeed. English reconnaisance indicates that they have. That's why Churchill has resisted the "second front" (cross-Channel invasion). He knew the odds.

There are four alternatives: (1) The inspired Russians, assured at last that the English and the Americans will establish a "second front," may pour their reserves into a drive which will carry to the borders of Germany, thus hastening the eventual German capitulation.

(2) We may be able to fly over the Nazi coastal fortifications. This will require a superiority in airpower beyond that now publicly envisualized as possible. New and secret weapons may make it possible, but most military commentators doubt it.

(3) Diplomatic offensives may succeed in aligning Turkey and the Balkans on our side, or even the Germans themselves. This alternative seems to have been quashed, temporarily, by recent diplomatic developments, plus the uncertainty caused abroad by American union labor strike threats.

(4) Knowledge of our spectacular achievements in the realm of invasion preparations may cause the responsible (as contrasted to the "intuitive" and mystical Hitlerians) Germans to admit to a military checkmate.

As for this latter alternative, it's freely admitted that the Germans probably have some hopeful "secret weapons" which they are saving to combat the "second front" invasion. However, it's possible that our side has some surprise weapons, too.

In this all-important invasion, we can pit at least 4,000,000 British and American troops against, at the most, 1,500,000 Nazi veterans. The Nazis could lightly man their mechanically perfect coastal defenses and hold the bulk of their mobile troops in the rear in readiness to move in whatever direction appears to bear the terrific brunt of the Allied invasion.

Nazis appear to be especially concerned over protecting the railhead seaports familiar to so many Americans, such as The Hague, Hook of Holland, Flushing, Zeebrugge, Ostend, Calais, Le Havre, Cherbourg, Brest, Lorient, St. Nazaire. On the other hand, knowing that the Germans will be expecting landings at these points, a real thrust might well be made from another angle.

This terrain is not nearly so difficult as that now being traversed so painfully in Italy. To be sure, it may be fortified within an inch of infinity, but it can be flown over and outflanked with equipment soon to become available—if we get enough of such equipment.

(Concluded on Page 13, Column 1)

No Program Yet On Production of Cases & Coolers

WASHINGTON, D. C.—There are no programs now under consideration for easing restrictions on the manufacture of various prohibited items of air conditioning and refrigeration equipment such as display cases, beverage coolers, comfort cooling machinery, and other items, WPB officials told the General Refrigeration and Air Conditioning Industry Advisory Committee at its recent meeting.

The Advisory Committee was also informed that the new "Freon"-producing facilities at Deepwater, N. J., and at East Chicago, Ind., will bring the monthly production of this refrigerant to 4,800,000 pounds.

Completion of the new Deepwater unit, originally scheduled to be in operation by Feb. 1, has been delayed until April 1. It will increase the total monthly production another 2 million pounds. Assurances were given to the committee that adequate stocks of raw materials would be available for the new producing facilities.

Sears Directs Sales Of Par Compressors

DEFIANCE, Ohio—R. L. Sears has been appointed sales manager of the Par Division of Lynch Mfg. Corp. here, it was announced by Harry Pendergast, vice president and general manager. Mr. Sears will have charge of all sales of Par air compressors and condensing units, which are distributed through jobbers.

Mr. Sears was associated with the Automotive Division of Sherwin-Williams Co. for 23 years, as a district sales manager in Texas; as sales manager of the automotive finishing business in Cleveland; and for the past two years as sales manager of all the company's operations in six New England states.

Rema Makes Plans For 'Victory' Show; Spring Meeting Set

ST. LOUIS—Refrigeration Equipment Manufacturers Association will soon announce to the industry its plan to promote an All-Industry Victory Exhibit and Show when victory has been won, according to discussions at the meeting of the executive committee of the Association.

Rema had sponsored the All-Industry Refrigeration and Air Conditioning Exhibition in years prior to the war.

Spring meeting of Rema will be held April 25 and 26 at the Stevens hotel in Chicago, it was announced. The National Refrigeration Supply Jobbers Association will meet there at the same time, and it is probable that a joint meeting will be held similiar to the one at the last meeting at French Lick, Ind.

John Wyllie, Jr., immediate past president, told of the work of the National Refrigeration War Council and paid particular tribute to W. Ray Kromer for the work he has done in drawing up a plan for the recruiting and training of service engineers through the National Refrigeration Manpower and Training Program.

A nominating committee was named to select candidates for three directorship vacancies in the Association.

5,000 May Train For Service Jobs, Kromer Declares

CLEVELAND—As many as 5,000 men are likely to receive training in refrigeration service work offered under the National Refrigeration Manpower and Training Program on the basis of reports of activities of Local Councils made to W. Ray Kromer, national director here.

A meeting of the National Refrigeration Manpower and Training Program will be held Feb. 28 in Washington at which time a report will be given on the progress of the program. The Committee will also attempt to get a stronger stand from government officials on the matter of getting deferments from selective service for experienced refrigeration repairmen.

The National Refrigeration Supply Jobbers Association has thrown strong support behind the training program, Mr. Kromer said, the national officers advising the members to take the initiative in establishing local activity in places where other groups did not take it up.

Mr. Kromer also reported that Sterling Smith, Chief of the Refrigeration and Air Conditioning Section of WPB, has written the Local Program coordinators, praising them for their work and pointing out the importance of the program. Mr. Smith has also contacted members of the General Refrigeration Industry Advisory Committee urging them to have their representatives in the field get behind the program.

Terhune Executive Of Jennings Co.

CHICAGO — E. A. Terhune, formerly sales manager of the Electric Refrigeration and Air Conditioning division of Servel, Inc., has been appointed vice president, assistant to the president, and a director of the O. D. Jennings & Co., manufacturer of refrigerated vending equipment here.

The Jennings Co. is one of the oldest manufacturers of coin-operated machines in this country, having started in 1906. Postwar operation of the company will include considerable expansion in the production of refrigerated vending machines for bottled beverages, milk, fruit juices, and other products, as well as the coin-operated equipment heretofore made.

Mr. Terhune has been active in the refrigeration field since 1926, when he joined the Frigidaire organization in New England, becoming retail sales manager for that district. Subsequently he formed his own distributing organization, the Appliance Engineering Co., in Boston. He joined Servel 10 years ago, first being eastern manager, and becoming sales manager in 1939.

Goes Elected President Of Vilter Mfg. Co.

MILWAUKEE—Fred T. Goes has been elected president of Vilter Mfg. Co. to succeed the late William O. Vilter. Mr. Goes had been vice president since 1938.

Replacing Mr. Goes as vice president is William B. Vilter, who was also selected to fill his father's place on the board of directors. Mr. Vilter will continue as director of personnel also.

Other officers of the company include E. B. Tilton, executive vice president and treasurer; E. F. Vilter, secretary, and W. H. Wenzel, assistant secretary.

Mr. Goes has been comptroller, secretary, and vice president successively.

WPB Probes 'Black Market' In Freezer-Storage Units

Priorities Files of Coil, Compressor Makers Checked as First Step

WASHINGTON, D. C. — WPB's Compliance Division is now engaged in a major investigation into alleged "black market" manufacturing and sales practices on freezer-storage cabinets for home and farm use, it was revealed here last week.

Initial steps of the investigation are said to include an examination of the records of shipments by manufacturers of condensing units and coils. The investigators will seek priorities for such equipment that have been falsely rated and extended.

This does not mean, it was pointed out, that manufacturers of condensing units and coils are under suspicion of collusion in "black market" operations on freezer-storage cabinets. Fact is that those who have produced equipment illegally have been able to get lumber and other materials without a priority, but since a rated order is necessary for a unit or coil, the records of the manufacturers of such equipment offer the logical place to start such an inquiry.

It is believed that most of the sales of farm-freezers produced illegally were made directly by those who had manufactured or assembled such equipment, and that there will be little involvement of those ordinarily engaged in the distribution of refrigeration equipment and fixtures.

Criminal proceedings are reported to have been instituted, as a result of earlier investigations, against a West Coast firm that allegedly had converted milk coolers to farm storage-freezer units. In this case the concern is charged with violating both the farm machinery order and Order L-38, the refrigeration equipment order.

Locker Patron Given $5,000 Judgment; Firm Seeks New Trial

COLUMBUS, Ohio—Attorneys for the City Ice & Fuel Co. here are asking for a new trial in the case of Miss Elizabeth Simons, a patron of the locker plant operated by the company, who received a $5,000 judgment against the company in Common Pleas court here earlier this month for allegedly being locked in the food locker storage room for 25 minutes.

Miss Simons testified that she entered the locker room to get a frozen goose when the door swung shut, confining her in a temperature ranging from 0 to —5° F.

She claimed that she rang an emergency bell to summon help, but that it was 25 minutes before an attendant came to let her out of the room.

Fine Manufacturer In L-38 Case

MINNEAPOLIS—Harold L. Schaefer, president of Schaefer, Inc., manufacturer of commercial refrigerator equipment and ice cream cabinets, has been fined $15,000 in Federal Court here on a charge of violating War Production Board quotas in the manufacture of such equipment in 1942.

The case was the first WPB prosecution in Minnesota since the war and the fine was among the largest imposed for WPB violation in the country. WPB officials themselves expressed surprise at the extent of the penalty, but the judge who imposed the fine has a reputation for handing out stiff fines in OPA cases.

One official declared that "Schaefer's position is no different than a great number of other manufacturers. He shipped more equipment to the field than he received back ratings, and it naturally put him in a bad spot when the investigation was made."

The Federal suit against Harold L. Schaefer was in no way connected with the investigation into the alleged "black market" on freezer-storage units, WPB officials pointed out last week. There was no charge of "black market" operations whatever in the Schaefer case.

Mr. Schaefer was charged with building a number of frosted food cabinets, low temperature mechanical refrigerators, and ice cream cabinets between July 1 and Dec. 31, 1942, involving use of strategic materials unauthorized by WPB.

Mr. Schaefer admitted the violation but explained that he and the vice president of the company had been away from the plant on a mission to get a government contract.

They got a contract to manufacture fuses (Schaefer is now devoting its manufacturing facilities 100% to war production) but while they were gone a ban had been placed on the production and sale of the refrigeration items which the company makes. In the absence of the top company officials, however, operations were continued.

Charges against R. B. Norris, vice president, and B. W. Hanson, secretary and treasurer, were dismissed. The court stipulated that the fine be paid $5,000 at the time of fining, $5,000 in 30 days, and $5,000 more in 60 days.

Copper Wire Shortage Halts Current Plans For Small Appliances

WASHINGTON, D. C. — No program for the production of several of the smaller electric appliances, such as mixers, juice extractors, and electric heating pads, for civilian can be considered in the near future because copper wire, which would be used in their construction, is not plentiful enough to permit such production, the Office of Civilian Requirements of the War Production Board said Feb. 17.

Contrary to common belief, said OCR, reductions in the small arms program have not resulted in a surplus of copper. The supply of copper is now in balance with demand, but the margin of balance is so narrow that slightly increased use of copper can be permitted only for a few essential items that are directly or indirectly connected with the war effort.

Three main factors have been responsible for improving the copper situation: (1) production in small copper mines has been encouraged through subsidies; (2) the Army has released 5,000 soldiers subject to call to work in the copper mines; and (3) the Army and Navy have conserved copper wherever possible, even when this has resulted in higher costs.

When the 5,000 soldiers return to active duty, copper production will drop. Also, changing military requirements may result in increased use of copper.

A further deterring factor in connection with production of small electrical appliances is the shortage of skilled labor and facilities for

(Concluded on Page 4, Column 3)

No Electric Fans Seen For Public, WPB Says

WASHINGTON, D. C.—The War Production Board reported recently that members of the Domestic and Commercial Electric Fan Industry Advisory Committee have emphasized that no production of electric fans for retail sale to civilians can be resumed, and production of fans for essential industrial and hospital purposes cannot be increased enough to meet the demand under present restrictions.

Committee members asked that limitations on materials needed by the industry be relaxed sufficiently to permit the carrying out of a war emergency program for the production of 100,000 fans this year to fill military and export orders.

Your refrigeration parts and supply house in Central New York and Northern Pennsylvania

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CENTRAL SERVICE SUPPLY CO.

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Heads Par Sales

R. L. SEARS
Has been appointed sales manager of Par Division, Lynch Mfg. Corp.

Correction

In the article "Sound Business and Credit Tactics for a Refrigeration Parts Distribution Firm" published on pages 18 and 19 of the Feb. 14 issue there was one paragraph which read:

"The inventory necessary to maintain adequate stocks of all items under normal conditions will run about $100,000. Thus, a ratio of turnover to sales is 7½ to 10."

The figure "$100,000" should have read "$10,000."

Leo J. Freitas Resumes Post as Alco Field Man In Texas & Oklahoma

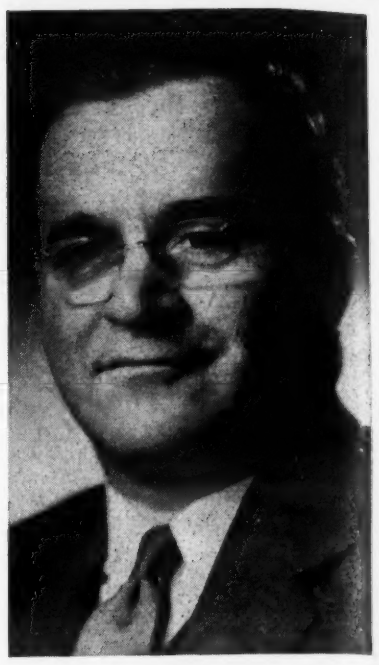
DALLAS, Texas—Leo J. Freitas of Dallas, returned in January to his duties as field engineer in the Texas and Oklahoma territory for the Alco Valve Co., after a leave of absence since July, 1942, which was spent with the War Production Board in Washington.

Serving WPB in the Refrigeration Section, General Industrial Equipment division, he assisted in the administration of Orders L-38 and M-28 and later was chief of the Refrigerant and Accessories unit.

In releasing Mr. Freitas, Fred W. Gardner, director of the General Industrial Equipment division, said, in a letter to Alco: "We want to take this opportunity to express to you and to your company our appreciation for sending Mr. Freitas to Washington to assist us in the war work here, when his services were needed so much. Mr. Freitas has performed splendidly and we wish him every success in resuming his activities with your company."

Before joining Alco in January, 1941, Mr. Freitas spent seven years with Fedders Mfg. Co. as experimental engineer, as branch manager at Dallas and at Detroit, and as general field engineer. After that he spent a year with Peerless of America as manager of the Dallas factory branch.

Donovan Named Airtemp Manager In N. Y. Area



J. J. DONOVAN

* * *

NEW YORK CITY—J. J. Donovan has been appointed regional manager of the Chrysler Airtemp New York office, and will direct sales and service activities in the greater New York area and New England.

Mr. Donovan has been Assistant Director of the Automotive Division of WPB in charge of the production of automotive replacement parts.

Prior to his connection with WPB, Mr. Donovan had a long record of experience in the refrigeration and air conditioning business, starting with Frigidaire in 1923 following his graduation from Syracuse university. He later joined the refrigeration department of General Electric Co. where he eventually became manager of the apartment house and new construction division of the company's refrigeration department.

In 1932 he was appointed manager of the G-E Air Conditioning department, setting up the initial organization for G-E in this field. He continued in this capacity until 1939 when he formed his own company.

WPB Revises Form 1319 To Replace 20 Forms Previously Needed

WASHINGTON, D. C.—In an effort to save paperwork and time in the handling of applications for authorization to purchase or deliver equipment, WPB on Feb. 14 announced the approval of a new and standardized form to take the place of the 20 that previously covered 52 items of equipment.

The new form to be known as WPB Form 1319, will supplant the old variations of WPB Form 1319, as well as many others and will cover the entire field with the exception of those coming under the head of the old PD-1A and PD-3A, which are applications for certain preference ratings.

The new form, covering four pages, will have the same places of filing, same number of copies, and same methods of processing as the present forms. The net result is that only one instruction book and one form will control all such applications.

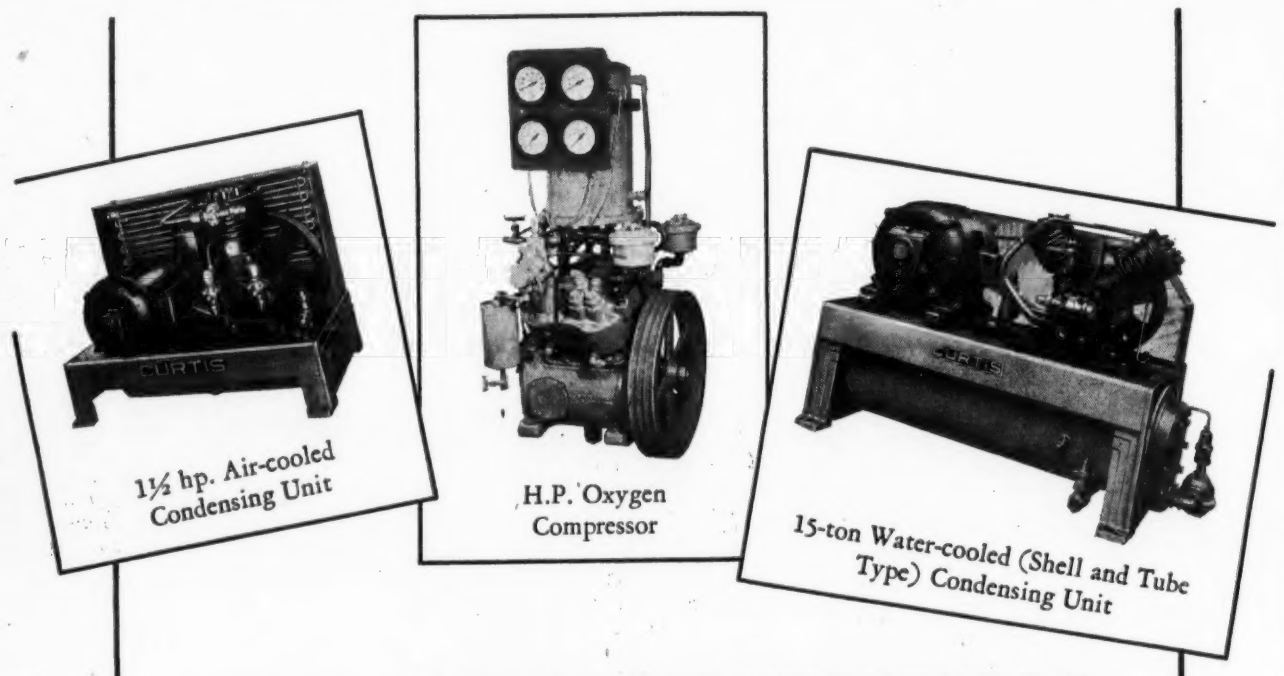
Copies of the instruction book will be included in "Products and Priorities," monthly publication of the board designed to keep executives and manufacturers informed on current orders and forms.

Forms are now out and instructions are being circulated.

Hess Elected Head of Indianapolis League

INDIANAPOLIS — Dan C. Hess, operating vice president of the Indianapolis Power and Light Co., was elected president of the Electric League of Indianapolis, Inc., at its recent annual meeting.

Also named were C. H. Domhoff, manager of the Guarantee Tire and Rubber Co., vice president; H. W. Claffey, vice president of the Sanborn Electric Co., secretary; Tom Beecher, manager of the Graybar Electric Co., assistant secretary; William J. Morgan, district manager of the Westinghouse Electric & Mfg. Co., treasurer, and L. O. Rainier of the Rainier Furniture Co., assistant treasurer.



Making CURTIS COMPRESSORS Is Our War Assignment—

Which Assures Improved Design, Higher Efficiency, and Longer Life For *Your* Postwar Curtis Equipment

★Working at capacity to supply the needs of our Armed Forces and essential industrial requirements, Curtis wartime production is devoted almost exclusively to the thing we can do best, the manufacture of regular Curtis Products in ever-increasing quantities

Curtis Air Conditioning and Refrigeration equipment is following the Armed Forces on land, sea, and in the air, serving a wide range of uses—from special low temperature units for testing laboratories and various wartime industrial applications to the making of Oxygen Compressors for the Army Air Forces overseas.

Thus we are adding this war experience in research, development, and production to that already accumulated during the past 90 years of Curtis' existence. As a result, improved facilities and advanced engineering principles will be reflected in *still better* CURTIS equipment after the War is won and peacetime markets are restored.

Why not let Curtis work with you on *your* postwar plans *now*? Write today.

FOR VICTORY BUY UNITED STATES WAR BONDS AND STAMPS

CURTIS REFRIGERATING MACHINE DIVISION
of Curtis Manufacturing Company
1912 Kienlen Avenue St. Louis, Missouri

CURTIS REFRIGERATION AIR CONDITIONING ... COMMERCIAL

DEPENDABLE

TYPES WP AND WL PRESSURE ACTUATED CONDENSING WATER REGULATORS

Individually tested for efficient operation—these valves may be mounted in any position and will give dependable, trouble-free performance. Brass body, two ply power bellows, and corrosion resistant materials for all parts. WL valves are available in ⅜ inch FPT and WP valves in ⅜, ½, and ¾ inch FPT.

TYPE WP

TYPE WL

Write For a Copy of Our Latest Catalogue

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2100 INDIANA AVE.
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USE A "Y" STRAINER for large capacity and long service

HENRY VALVE CO. TRADE MARK

Due to its features of design the Henry "Y" Strainer not only gives complete protection to condensing unit and control equipment against scale and foreign matter that may be present in the system, but it also permits easy servicing with a minimum of interruption to plant operation.

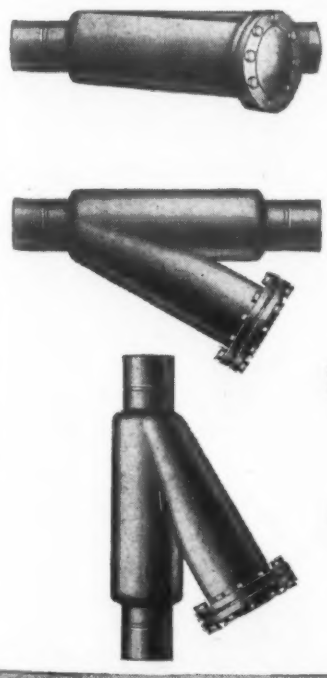
The Henry "Y" Strainer, like other Henry products, has become the choice of the Army, Navy, Maritime Commission and those who serve the refrigeration and air conditioning industry in time of peace as well as in time of war.

7 REASONS WHY YOU'LL LIKE IT BEST!

1. Light in weight – due to its tubular construction.
2. The strainer screen can be easily and quickly cleaned without removing the strainer from the line.
3. "Wave-Flow" design results in negligible pressure drop.
4. Cleaning seldom necessary because of large screen area.
5. Internal baffle prevents injury to the heavily reinforced monel screen. In this connection it is well to remember that suction velocities may exceed 5,000 feet per minute.
6. Patented forged steel clean-out flange is distortion-proof, making a tongue and groove anchored-gasket joint with strainer body
7. Strainer is of welded steel construction. Rustproofed. Available with copper sockets for O.D. tubing and steel F.P.T. connections for iron pipe.

Available in 5/8" to 3 5/8" O.D.S. sizes and in 1" to 3" F.P.T. sizes with screen area ranging from 23 to 175 square inches.

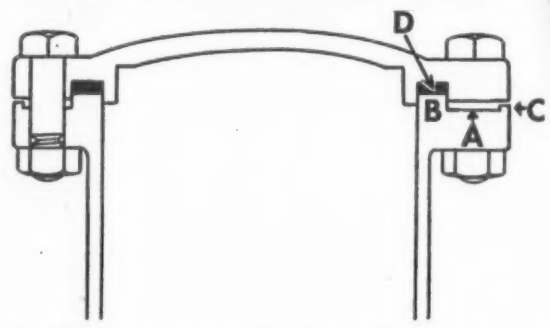
FOR SUCTION OR LIQUID LINES



The Henry "Y" Strainer when used in suction line service will not trap oil if the strainer is installed on its side as shown. 50-mesh screen is recommended for suction lines.

For liquid line service the Henry "Y" Strainer can be installed either in a horizontal or vertical position. 100-mesh screen is recommended for liquid lines.

Why the Patented Henry Flange Is DISTORTION PROOF



Strains due to uneven or excessive tightening of bolts are absorbed in the recessed area (A) and cannot be transferred to the flange gasket face (B) made up of the inner flange rim and the strainer housing to which the flange is welded. Lip on outer flange rim (C) acts as a "stop" to prevent excessive drawing up of bolts. Gasket is located in recessed area (D). Flange makes tongue and groove anchored-gasket joint with strainer.

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SOLD BY LEADING JOBBERS EVERYWHERE

PACKLESS AND PACKED VALVES • STRAINERS • DRYERS FOR REFRIGERATION AND AIR CONDITIONING
AMMONIA VALVES • FORGED STEEL VALVES AND FITTINGS FOR OIL, STEAM AND OTHER FLUIDS

Commercial REFRIGERATION
AMANA
Modern Display Cases
Coolers, Refrigerators
AMANA SOCIETY, AMANA, IOWA

For: TRUCKS, LOCKERS, COOLERS, COUNTERS AND CABINET CONVERSIONS, use:
KOLD-HOLD PLATES
KOLD-HOLD MFG. CO.
LANSING, MICH., U.S.A.

Water Heater Group Told 'No Copper Now'

WASHINGTON, D. C.—Copper is as scarce now as it was a year ago and no changes in present restrictions can be made now, declared a representative of WPB's Copper Division, speaking before the Plumbing and Heating Water Heater Industry Advisory Committee which had met to recommend to WPB that production of steel jackets for water heaters and copper coils for side arm heaters be permitted as soon as materials can be spared from war production.

Committee members told WPB that substitute water heater jackets made of paper and asbestos sheets and cast iron water coils for side arm heaters have not proved satisfactory in all cases.

With Chicago Firm

E. A. TERHUNE
Vice president of O. D. Jennings & Co., maker of refrigerated vending units.

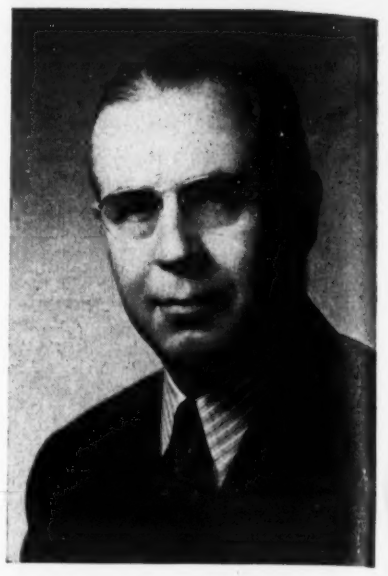
Plouff and Vermilye Advanced by Ansul

MARINETTE, Wis.—F. J. Hood, secretary-treasurer of the Ansul Chemical Co., announces advancements for two of the firm's representatives, Tom Plouff and George Vermilye.

Plouff, who was formerly in charge of the Des Moines office, takes over the Indianapolis district office formerly managed by Vermilye, who becomes assistant to sales manager, L. C. McKesson.

In addition to the Indianapolis territory, Plouff will continue to cover Kansas and the western half of Missouri. The states of Minnesota, Iowa, North and South Dakota and Nebraska will be covered by Herman Goldberg, who is in charge of Ansul's Chicago office.

To New Posts



H. D. CONKLIN

F. B. WILLIAMS

* * *

Conklin, Williams Are Shifted by Hotpoint

CHICAGO—Harold D. Conklin and F. B. Williams, 15-year Hotpoint veterans, have been moved up in a shift of personnel just announced by G. H. Smith, general sales manager of Edison General Electric Appliance Co., Inc.

Mr. Williams, manager of the refrigerator sales division, has been named regional sales manager of the Southern region, which comprises Texas, Louisiana, Arkansas, Mississippi, Alabama, Georgia, Florida, Tennessee, the Carolinas, and Virginia. Headquarters are in Atlanta.

Before heading the refrigerator division, Mr. Williams was district sales manager for the Southeastern territory.

Mr. Conklin comes to Chicago as manager of the range and water heater sales division after nine years in Los Angeles as district sales manager in the Pacific Southwest covering five states and the Hawaiian Islands. He has been with Hotpoint during his entire business career, having previously held two assistant manager posts in Chicago.

In Los Angeles Mr. Conklin headed the Electrical Development League of Los Angeles and was a member of the Los Angeles Sales Managers' Club.

Amana Society Occupies New Refrigerator Plant

AMANA, Iowa—New plant equipped to produce display cases, coolers, and component parts for locker plants has been occupied by the Refrigeration Division of the Amana Society here, whose continued high production of war materials recently won a star for its Army-Navy "E" burgee.

A pioneer builder of complete frozen food locker plants, the Amana Society is preparing a new booklet entitled "Frozen Food Lockers . . . America's Great Business Opportunity," which will be distributed free.

Current Plans Dropped On Small Appliances

(Continued from Page 1, Column 5)

drawing copper wire for all but the most essential war uses. As a result of the tightening labor situation in the wire mills, production may drop below the present level.

This does not apply to the electric iron program, which has already been approved by WPB and which will be effected under a forthcoming limitation order.

Worthington Shipments $150,000,000 In '43

HARRISON, N. J. — Shipments during 1943 by Worthington Pump & Machinery Corp. hit a new high of more than $150,000,000, an increase of nearly 50% over the 1942 total of $103,700,000. Net earnings, it is reported, should be greater than the $7.86 a common share of 1942.

Despite the reduced rate of incoming orders in the final 1943 quarter, and some recent contract cancellations, Worthington's backlog at the beginning of 1944 was larger than a year ago.

During the past year the company paid a dividend of $2 on common stock and paid off all back loans.

Goldman To Taylor Co.

BUFFALO— Meyer Goldman has been appointed manager of the new Projected Appliance Department of H. D. Taylor Co. of Buffalo. He was formerly sales manager of the Joseph Strauss Co. here for 18 years.

Chief Engineer

Refrigeration and air conditioning equipment manufacturer with over 25 years' experience in the industry requires the services of a chief engineer. This man must have had experience in design engineering of air handling and heat transfer equipment. Experience in compressor design not necessary. This is a real opportunity for a man desiring a permanent position with an old established manufacturer who is now expanding operations for postwar production. Good living conditions in a city of 75,000 population. Write giving qualifications, age, and nationality. All replies will be held strictly confidential.

Box 1492, Air Conditioning & Refrigeration News

Ammunition for today and tomorrow

"Fittings" the trade calls them. But the term tells only half the story—and the least exciting half, at that. For these carefully-made but inconsequential-looking gimmicks are vital to every mobile fighting unit whether it wages battle on land . . . on sea . . . or in the sky. They are, in fact—ammunition!

These assorted fittings have been produced by the millions-per-week for war purposes in the four plants of The Weatherhead Company. And with Victory and Peace, they will become the ammunition with which we shall be prepared to help you build the better world for which we are all fighting.

Look Ahead with
Weatherhead
THE WEATHERHEAD COMPANY, CLEVELAND, OHIO
Manufacturers of vital parts for the automotive, aviation, refrigeration and other key industries.
Plants: Cleveland, Columbia City, Ind., Los Angeles
Canada—St. Thomas, Ontario

FREE: *Write on company letterhead for "Seeds Of Industry"—a history of The Weatherhead Company, its many facilities and diversified products.*

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CONDENSING UNITS AND PARTS
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A complete line backed by nearly a quarter century of user confidence. Write for prices.
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13 S. 5th St., Richmond, Ind.

STEEL COILS FOR REFRIGERANT and BRINE
KRAMER TRENTON Co.
Heat Transfer Products
TRENTON, N. J.

ARMY E NAVY
PREMIUM for PRECISION
M. & E. split-hair precision in ordnance production enables split-second firing on the battle front. The manufacturing principles involved in producing ordnance — in which a premium is placed on precision — are a natural follow through on the old established M. & E. practice in compressor construction. M. & E. postwar compressors will again reflect this quality craftsmanship.
M&E EST. 1866
MERCHANT & EVANS COMPANY
PHILADELPHIA, PENNA. • Plant: LANCASTER, PENNA.

Results of FRIGIDAIRE GOOD-WILL BUILDING PROGRAM foreshadow bigger things to come

★THE STORY of a Wartime Plan which we sincerely believe is helping both the Public and the Frigidaire Dealer Organization

OUR OBJECTIVES

1. To cooperate with important Government programs.

2. To provide a real and needed service, not only to the millions of Frigidaire users, but also to the users of all other refrigerators.

3. To help keep the name Frigidaire before the public in a way that would be *favorably* remembered.

4. To help Frigidaire Dealers build good will and maintain their identity with the Frigidaire business.

THE PROGRAM

1. Consistent advertising in leading women's magazines.

2. Activities offering materials and other help to home economists and others for classes and study groups.

3. A simple, practical handbook on the use and care of a refrigerator, entitled "Wartime Suggestions".

4. A motion picture for group use entitled "How to Get the Most out of Your Refrigerator."

5. Effective dealer helps and campaign information.

WHAT DEALERS DID

Frigidaire Dealers built good will by —

- Giving Wartime Suggestions booklets to store visitors; mailing them to customers; leaving them on service calls.
- Arranging with thousands of Teachers, Red Cross, Group Leaders, County Agents, and many others to use the General Motors motion picture, and distribute Wartime Suggestions booklets to these groups.
- Tying in the program with War Bond, Cooking School and similar activities in their stores.
- Distributing booklets through Boy and Girl Scouts, Ration Boards, Groceries and in many other ways.
- Featuring Frigidaire's helpful messages and booklets in attention-getting displays, and in their newspaper, radio and direct mail advertising.

THE RESULTS

- Over 245 million advertising messages attracting an unusually high percentage of women readers, have helped keep the public reminded of Frigidaire Products and Dealers.
- More than 6¾ million "Wartime Suggestions" booklets required to meet requests—more than 5¾ million of these distributed through Frigidaire Dealers.
- More than 625,000 booklets and 250,000 reprints of advertisements requested by Home Economists and group leaders for distribution to classes and other groups.
- The free Motion Picture "How to Get the Most out of Your Refrigerator" has been seen by thousands.
- Hundreds of expressions of interest and appreciation have been received from Government agencies, Educators, Home Economists, Group Leaders, Dealers and the public.

Watch for '44 Announcement!

It is on this foundation that Frigidaire has built a new and enlarged program for 1944. Watch for the announcement!

For Excellence ARMY E NAVY *in War Production*

FRIGIDAIRE
Division of
GENERAL MOTORS
DAYTON 1, OHIO, AND LEASIDE, ONTARIO
Peacetime Builders of
ELECTRIC REFRIGERATORS · RANGES · WATER HEATERS
HOME FREEZERS · ICE CREAM CABINETS
COMMERCIAL REFRIGERATION · AIR CONDITIONERS
BEVERAGE, MILK, AND WATER COOLERS

Listen to
GENERAL MOTORS SYMPHONY OF THE AIR
Every Sunday Afternoon, NBC Network

★

LET'S ALL BACK THE ATTACK! BUY EXTRA WAR BONDS!

★

Slabaugh Gets New Westinghouse Post

W. E. SLABAUGH

* * *

MANSFIELD, Ohio — W. E. Slabaugh, Jr., former college instructor and a Westinghouse sales engineer for seven years, has been appointed manager of the company's vacuum cleaner sales section.

During the remainder of the war Mr. Slabaugh will continue working in that branch of the War Products Engineering department which handles contracts for ailerons, elevators and other parts for fighter planes.

After the war, he will direct development work, manufacture and distribution of the most complete line of vacuum cleaners ever made by Westinghouse, including floor, tank and hand models and attachments. A limited amount of experimental work on vacuum cleaners is now being conducted at the Westinghouse plant in East Springfield, Mass.

Mr. Slabaugh joined Westinghouse in 1936 as commercial refrigeration supervisor for Ohio, Michigan, Western Pennsylvania, West Virginia, Kentucky and part of Indiana. He held this position until assigned to the War Products Engineering department in 1942.

After receiving his bachelor of science degree from Case School of Applied Science at Cleveland in 1929, Mr. Slabaugh entered Massachusetts Institute of Technology on a graduate scholarship, and received his master of science degree the following June. Before joining Westinghouse, Mr. Slabaugh for three years taught mechanical engineering at Case and was tennis coach and assistant basketball coach.

Jack Lee Heads Atlanta Electrical Association

ATLANTA, Ga. — Jack Lee was elected president of the Atlanta Electrical Association at its annual meeting here.

Also named were: vice president, Howard J. Wilson; honorary secretary, J. C. Brown, and directors, John Oliver, Robert B. Shelly, R. T. Ringler, Joe Almand, M. W. Edwards, George T. Marchmont and E. E. Bocock.

MASTERCRAFT
ADJUSTABLE PAD AND CARRYING HARNESS

Used and endorsed by thousands of refrigerator dealers in the United States and Canada.

Pad is adjustable to all makes and sizes of refrigerator cabinets; thoroughly protects finish of cabinet from scratches and mars during moving; easily and quickly put on or off; sturdy, lasting construction; easily pays for itself in a short time. Price $11.75 each.

Attractive lettering of your name on pad at $2.00 each extra.

Harness is a separate unit from the pad, is adjustable, and provides a simple and convenient arrangement for carrying your refrigerator more safely and easily. Price $8.50 each.

Write for complete folder and prices on pads for refrigerators, washers, ironers, ranges, radios; also furniture pads and protective covers. . . . All prices subject to change without notice.

BEARSE MANUFACTURING CO.
INCORPORATED 1921
3815-3825 Cortland Street, Chicago 47, Illinois

D. W. May To Form Distributorship; Sees Great Postwar Boom

NEW YORK CITY—D. W. May has resigned as eastern regional manager of General Electric Co.'s electronics department, effective Feb. 15, to form his own distributing organization here to be known as D. W. May, Inc.

The new distributorship has the exclusive franchise with Farnsworth Television and Radio for distribution in the entire New York and New Jersey metropolitan market, he announced.

Mr. May declared, in announcing his resignation, that the backlog of orders for television, radio, and household appliances is so great that it will take years in the postwar period to meet the demand.

"I believe the demand for television and FM sets will be tremendous when the shooting stops," he averred. "FM is here now, but television, with chain transmitters scattered throughout the country and larger pictures, will come along right behind it. The wealth of scientific progress that has been made during the war will be reflected in the postwar offerings to consumers."

Mr. May has been with G-E since 1935 when he took charge of introducing the company's new radio line. He managed the General Electric Radio branch in New York City, and subsequently added the distribution of the G-E automatic blanket and vacuum cleaner.

Long interested in radio, Mr. May pioneered two radio stations, and in the early days distributed nationally famous lines including Crosley and Majestic. Later, taking over the Philco line, he laid claim to the largest radio distributing firm in the world with branches in New York City, Newark, and Boston.

Do Your Servicemen Follow These Rules?

ATLANTA, Ga. — Eight fundamental rules which every serviceman, particularly the new ones recruited through the present training programs, should follow to improve customer relations were outlined by "Electric Light and Power" recently. They are:

"1. A serviceman must have the correct attitude toward service, recognizing in each job an opportunity to build goodwill for himself, for his company, and the products.

"2. Be prompt in making every call; it creates an excellent impression.

"3. Courtesy and patience should always be displayed.

"4. Keep all promises.

"5. Display a sympathetic understanding toward your customers' complaints.

"6. Always be clean and neat in appearance.

"7. After each job, remove all dirt or smudges caused by your work.

"8. On every call be sure to look for other appliances in need of repair, or new equipment needed."

34,000 Ranges In Last 2 Quarters Goal of WPB

WASHINGTON, D. C.—A limited number of domestic electric ranges are expected to be made available for essential civilian needs in the third and fourth quarters of 1944, says WPB's latest pronouncement on range production.

Plans for carrying out a special war emergency program for the production of 22,000 domestic electric cooking stoves per quarter to meet the most essential needs of the armed services, hospitals, and Federal Public Housing Authority and Federal Housing Administration public housing projects and to provide essential replacement for civilians have been discussed with members of Domestic Electric Range Industry Advisory Committee. This total includes 17,000 ranges to meet the requirements of the Office of Civilian Requirements and FHA and 5,000 ranges for military, export, and FPHA requirements.

A preliminary draft of a limitation order under which production would be controlled was discussed with committee members and will be issued as soon as it receives final approval within WPB.

Production of ranges will be permitted only in plants where such production would in no way interfere with war work, Committee members were told.

N.E.W.A. Planning Chicago Meeting April 19-22

NEW YORK CITY—Second War Conference of the National Electrical Wholesaler's Association will be held at the Stevens hotel, Chicago, April 19 through 22, 1944.

Managing Director Charles G. Pyle indicated that the War Conference will include a complete review of the membership's participation in the many phases of the war program served by their numerous houses. The present status of government regulations and orders affecting electrical wholesaling will be considered, as well as the probable changes in prospect.

Postwar plans for electrical wholesalers and appliance distributors will be featured in the report of the Postwar Planning Committee. That committee, headed by Herbert Metz, general lamp and lighting sales manager of Graybar Electric Co., Inc., New York City, has conducted several outstanding forum meetings since its appointment last May.

By the time the conference opens many developments will probably have occurred which will have some direct bearing on reconversion plans.

The program committee is arranging for the appearance of outstanding business leaders to address the conference and Mr. Pyle expects to be able to make definite announcements about them soon.

Postwar Planning is

"Planned Electrical Merchandising"

SIMPLIFIES IT FOR YOU

Bulletin No. 3, now ready, is titled: *Planning Your Type of Appliance Business.* This, like the others, makes postwar planning less formidable, less mysterious. For it's just good basic common sense when explained like ABC by Chas. Low, eminent retailing authority, the author of this series.

One Purpose Only—to Help You. These bulletins are about *your* business, *your* store, *your customers,* right in *your* community—not about Hotpoint products. They're full of practical, field-tested ideas to help increase your business.

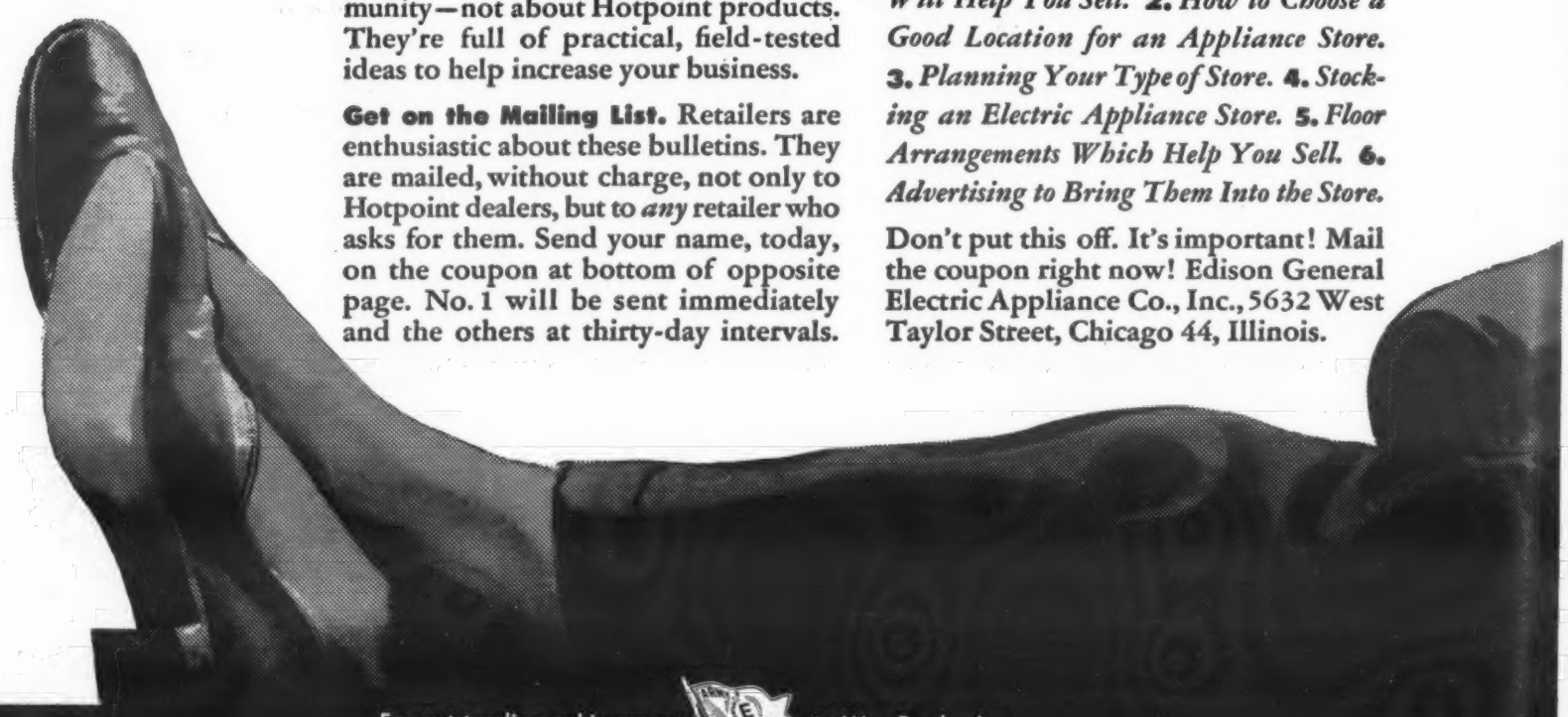
Get on the Mailing List. Retailers are enthusiastic about these bulletins. They are mailed, without charge, not only to Hotpoint dealers, but to *any* retailer who asks for them. Send your name, today, on the coupon at bottom of opposite page. No. 1 will be sent immediately and the others at thirty-day intervals.

Give Yourself This Advantage. Be armed for peace. The retailer who is best prepared, with sound knowledge about store location, secrets of display, making customers buy, etc. will have things his own way in the postwar period.

Subjects to be Covered. Here are the titles of the first six bulletins, which give a good idea of their contents.

1. *Plan Now for the Appliance Store that Will Help You Sell.* **2.** *How to Choose a Good Location for an Appliance Store.* **3.** *Planning Your Type of Store.* **4.** *Stocking an Electric Appliance Store.* **5.** *Floor Arrangements Which Help You Sell.* **6.** *Advertising to Bring Them Into the Store.*

Don't put this off. It's important! Mail the coupon right now! Edison General Electric Appliance Co., Inc., 5632 West Taylor Street, Chicago 44, Illinois.



For outstanding achievement in War Production

ELECTRIC Hotpoint KITCHENS

REFRIGERATORS · RANGES · WATER HEATERS · WASHERS AND IRONERS · CLOTHES DRYERS · AUTOMATIC DISHWASHERS · ELECTRASINK · STEEL CABINETS

We'll Need 3 Months for Reconversion, Say Majority of Appliance Manufacturers

WASHINGTON, D. C. — Within three months after they receive the "go ahead" signal, many manufacturers believe they will be able to deliver major appliances, with the exception of refrigerators to distributors, according to results of a survey conducted by the Postwar Planning Committee of the Electric Institute of Washington.

Forty-four of the 77 manufacturers who replied in the survey estimated three months for reconversion, provided there were no difficulties in obtaining materials. Six months was the estimate of 28 firms, including six refrigerator producers.

Only estimate longer than six months was that of one ironer manufacturer, while two air conditioning concerns, two oil burner manufacturers, and one commercial refrigeration firm said they were ready to produce and deliver now. It is assumed that these latter five firms are probably producing their regular lines at the present time.

Two other air conditioning manufacturers estimated three months for reconversion, and one guessed at six months. Ironer producers' estimates ranged from four at three months and four at six months to one for longer than six months.

Oil burner estimates were divided between the two ready to produce now and three who set their time requirement at three months.

All six of the radio manufacturers who replied to the questionnaire gave six months as their guess. Eight range manufacturers estimated three months, and five estimated six months.

Three months will be needed for them, said seven vacuum cleaner firms, while one other cleaner firm said six months. Washing machine manufacturers are about evenly divided between three and six months, six firms voting for three months and five guessing at six months. Water heater producers made estimates identical with the washer firms, six saying three months, five saying six months.

Only dishwasher manufacturer surveyed estimated three months for reconversion, while the one producer of commercial cooking equipment queried said six months.

Five of nine manufacturers of small appliances called for three months' reconversion, the other four setting up six months as their requirement.

Sol Schiff To Manage Philco of Detroit

DETROIT — Sol Schiff, formerly sales manager for the Brooklyn division of Philco Distributors of New York, has been named general manager of Philco Distributors of Detroit. He succeeds John Hawkins who has been transferred to the Philco headquarters.

Utility Accepts Monthly Payments Now For Postwar Delivery of Appliances

BIRMINGHAM, Ala.—A blue print on how to handle advance payments on merchandise for after-war delivery is furnished in a "Victory Purchase Plan" recently announced by the Birmingham Gas Co. and applicable to ranges, refrigerators, water heaters and house heating equipment.

Under the plan customers can pay any predetermined amount per month along with their gas bills. The company invests this in war bonds until such time as the desired appliances are available for delivery to the customers.

The matter of choosing the model, style, size and price range of the appliances is left until later. If the customer has deposited more than enough to pay for the desired appliance, he is remitted the difference in cash. If he still lacks some of paying the purchase price he can arrange the balance in monthly installments at 6%. This arrangement gets around the uncertain factor as to the price of the merchandise, a form of renegotiation as it were.

Furthermore, the company in circularizing all its consumers, as to the plan, stated the customer could change his mind at any time he desired and ask for his money back. However, several valid reasons why many customers will want to buy by this plan were listed as follows:

"1—You probably now have money to spare for investing in such a plan.

"2—By signing a Victory Purchase Plan now, you will be assured a priority position when the first gas appliance becomes available in limited quantities.

"3—The war effort will be aided by investing your payments in War Bonds.

"4—You will avoid the expense of finance charges which you will have to pay if you buy on the usual installment plan when appliances are available. Experience shows that in normal times it is difficult for many people to accumulate enough to buy for cash."

A priority registration plan for electrical appliances was announced recently by the R. B. Broyles Furniture Co., Birmingham, but customers were not asked to make any deposits in advance.

G. M. Transfers Golt To Allison Division

INDIANAPOLIS, Ind. — Appointment of R. C. Golt as contract coordinator for Allison Division of General Motors is announced by E. B. Newill, general manager.

Mr. Golt will supervise contacts with government agencies in connection with contracts for delivery of Allison liquid cooled aircraft engines, according to Mr. Newill.

A member of the General Motors organization since 1928, Mr. Golt has been district manager for Frigidaire division in New Orleans and Kansas City.

Coolerator's Chief

RUSSELL W. AYRES

* * *

Russ Ayres Named To Coolerator Post

DULUTH, Minn.—Russell W. Ayres has been appointed chief engineer of the Coolerator Co. here, and will take charge of all engineering and research and development work on postwar products.

Mr. Ayres, for the past three years head of research and development at Sunbeam Electric Mfg. Co. in Evansville, Ind., was formerly with General Electric Co. in Schnectady, N. Y. and Stewart-Warner Corp. in Chicago, and is recognized as an authority on household refrigerators.

Model Dispensary Equipped With Air Conditioning

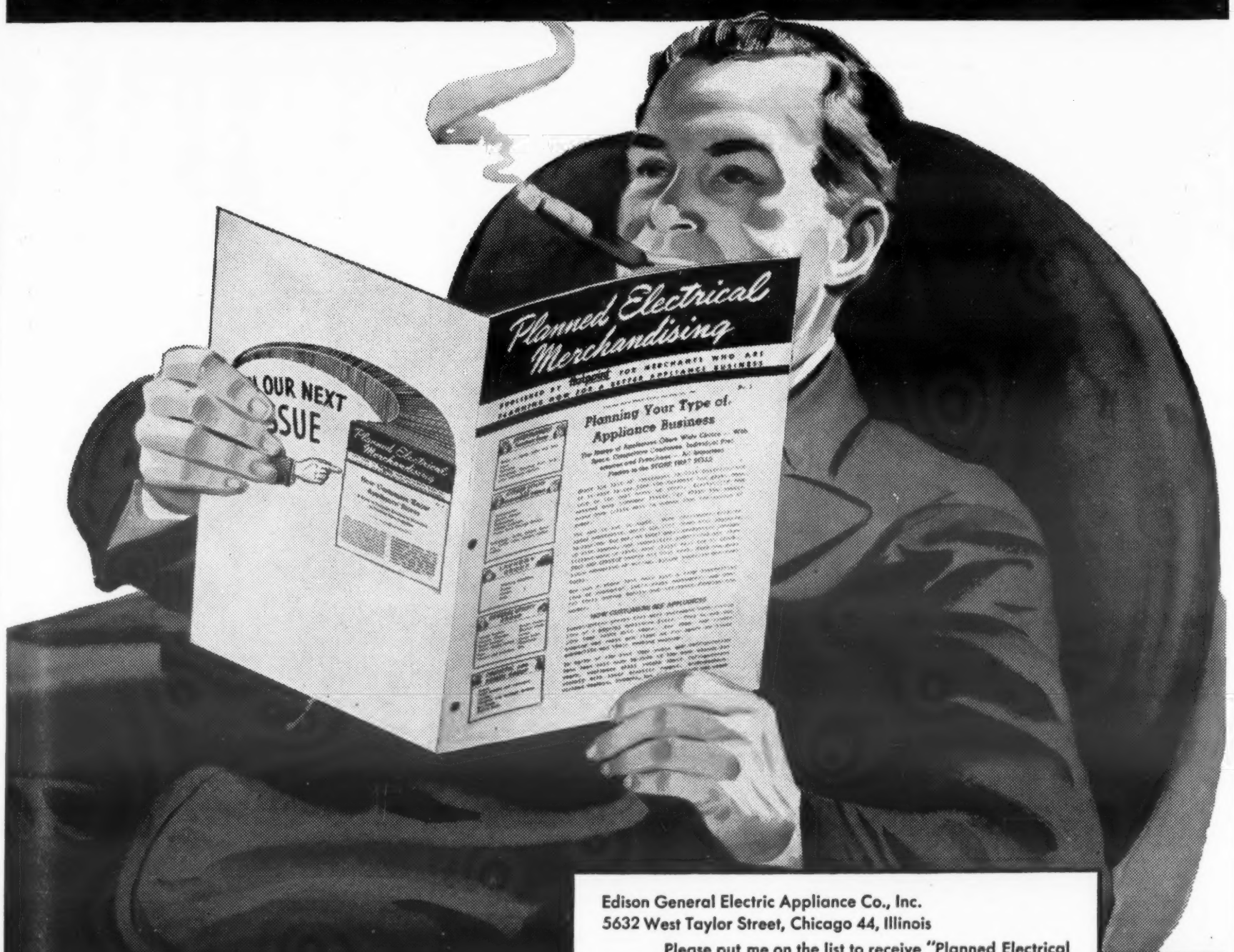
BERWICK, Ga. — The latest advances in medicine and science, including modern air conditioning, to protect the health and morale of its thousands of workers are provided by the American Car and Foundry Co., at the dispensary set up at its Berwick, Pa. plant.

In one of the most efficient and best equipped dispensaries in the country, 300 to 400 cases are here treated daily by newest methods and medication in the care of minor wounds as well as more serious cases.

A Carrier self-contained air conditioning unit supplies conditioned air throughout the dispensary which includes the main treatment room, a physiotherapy room, a fully equipped emergency operating room, two physical examination rooms, the chief surgeon's office, and a one bed hospital for emergency cases.

The air conditioning installation, according to the company physician, has been beneficial in reducing effect of shock from accidents.

easier than it sounds



Pin this coupon to your letterhead and mail today

Edison General Electric Appliance Co., Inc.
5632 West Taylor Street, Chicago 44, Illinois

Please put me on the list to receive "Planned Electrical Merchandising" Bulletins.

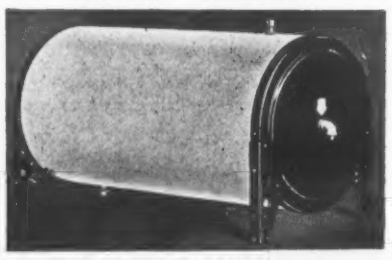
Name_____ Title_____ (Owner, Manager, etc.)

Firm Name_____

Address_____ (Street) (City) (State)

"DAY & NIGHT"

STORAGE TYPE TANKS SAVE SPACE



Compact "Day & Night" Storage Units, such as the Model CE-25 shown above, may be installed any place . . . on walls or ceilings . . . or integral with condensing unit . . . wherever cold water is required for drinking, jacket cooling, photographic processes, cooling welding tips, etc. A modern Scuttlebutt for shipboard use. Supplied on storage capacities from 6 to 100 gallons.

Write For Latest Data

DAY NIGHT COOLER DIVISION
DAY & NIGHT MFG. CO.
MONROVIA • CALIFORNIA
FACTORY REPRESENTATIVES
NEW YORK — A. C. Homeyer, 682 Bdwy. • Marc Shantz, 565 Wash. Blvd. — CHICAGO
ST. LOUIS — R. H. Spangler, 3331 Market St. • J. E. Parker, 228 2nd St. — DECATUR, GA.

Excellent Opportunity For REFRIGERATION ENGINEER

Old, established, middle-western corporation, with excellent nation-wide reputation and recognized leadership in all fields it serves, has opening for creative design engineer on mechanical and refrigerated apparatus.

The man we need has had at least 10 years experience on design, preferably on products for quantity production. He has initiative and imagination, including ability to carry a project from idea stage to a finished product, ready for production. Must have enough ability to develop project working alone, also be able to work with or direct the work of others.

All replies strictly confidential. Applicants should give full information, including age, nationality, technical education, all positions held and description of all design work done, salary expected and date available.

WRITE TO BOX 1523
AIR CONDITIONING & REFRIGERATION NEWS

Industry Sees More Co-op Advertising In Postwar Scramble To Get Dealers

Most Manufacturers Expect To Use Prewar Control Plans, Survey Shows

CHICAGO—Cooperative dealer advertising will continue to be highly important in the promotion plans of appliance manufacturers after the war in spite of certain drawbacks to the scheme, it was indicated by "Advertising Age" magazine in its Feb. 21 issue which contained results of a survey of 125 manufacturers in the appliance, automotive, clothing and shoes, and other industries.

Cooperative advertising may even be more important after the war, the survey indicates. "This is particularly true in the appliance and related fields, where a tremendous influx of new producers is expected when war production tapers," states the article.

"As the most difficult initial task of new producers in this field will be to secure distribution and dealers, and to induce special retail sales effort, most observers consider it a foregone conclusion that advertising allowances and dealer co-op advertising will play an extremely important role. Manufacturers already in the business, in fact, fear that newcomers may upset the entire distributive picture by providing absurdly large advertising allowances in their eagerness to corral outlets and to secure dealer push."

Seventy-two of the 125 companies queried in the survey replied, indicating, says "Advertising Age," an "unusual degree of interest in the subject." Of these 58, or 80.6%, used co-op dealer advertising in one form or another before the war, and 51, or 70.8%, expect to use it again after the war. Three others have not yet decided definitely on their postwar advertising policy in this respect.

Most popular cooperative advertising medium is the newspaper, which, the survey indicates, will continue in top position after the war, with spot radio in second place, direct mail third, and window displays fourth.

Manufacturers generally split cost of cooperative advertising on a 50-50 basis with the dealer, and this practice will no doubt be continued in the postwar period, the survey shows, "although a wide variety of other arrangements for payments is made," says the magazine. Maximum expenditures are set up, usually at 3% of the value of goods bought by retailers, it was said.

FOUR ARE LUKEWARM

Of seven manufacturers who declared in the survey that they wanted to get away from cooperative advertising, four were in the appliance field. Their comments indicate, however, that they will probably participate in such advertising, even against their will. They say:

1. "We will not use co-op advertising immediately. Shortage of merchandise during the restricted period ahead may make controlled advertising more practical."
2. "Too much detail and squabbling over methods."
3. "Hope to stop co-op advertising, but plans are not yet complete."
4. "Would like to get away from it, but our policy will depend to some extent on what our competitors do."

"Among manufacturers of various kinds of home appliances and equipment, 27 out of 30 used co-op dealer advertising before the war; but only 23 are definitely planning to continue this practice after the war, while five have decided against it, and two are undecided," states the aritcle.

"Before the war 26 of these 27 manufacturers used newspaper advertising in cooperation with dealers, 20 of them paying 50% of the cost, four paying unspecified amounts, one paying 25%, and one paying 75%. Fourteen used spot radio, 12 paying 50%, one 25%, and one varied. Eight used outdoor advertising, seven paying 50% and one 'part.' Thirteen used direct mail, seven paying 50%, one 50-100%, one 65%, one 25-50%, one 'part,' one 60-70%, and one out-of-pocket costs. Ten used window displays, five paying 50%, two 50-100%, two 'part,' and one none. Eleven used store displays, seven paying 50%, one 50-100%, one 25-50%, one none, and one varied. In addition, seven used other types of dealer co-op effort.

NEWSPAPERS MOST POPULAR

"After the war, 18 of the 23 who have definitely decided on a dealer co-op policy will use newspapers, 15 paying 50%, one paying 25%, one 75%, and one uncertain of the actual percentage. Eleven expect to use spot radio, nine paying 50%, one 25%, and one 'don't know.' Eight expect to use outdoor advertising, six paying 50%, one paying 25%, and one 'don't know.' Fourteen expect to use direct mail, seven paying 50%, two 50-100%, one 25%, one none, one 60-70%, and two 'don't know.' Eight plan to use window displays, four paying 50%, one 50-100%, one none, and two 'don't know.' Six expect to use store displays, three paying 50%, one 50-100%, one none, and one 'don't know.' In addition, four expect to use other forms of dealer cooperation."

NO CHANGE IN CONTROLS

Asked whether they would attempt to establish more controls over the volume and placement of copy in cooperative advertising after the war, most manufacturers replied that they were "well satisfied with their present or former systems of control."

Chief problem appears to be keeping expenditures by individual dealers at no more than a reasonable percentage of their total sales, and "this is being done more and more by limiting co-op advertising allowances to a fixed percentage of purchases.

"One appliance company goes so far as to say that it is considering placing co-op advertising itself, whereas another appliance manufacturer says that it will use less centralized control over this activity, and that more responsibility and authority will be placed in the hands of the field sales organization," reports the magazine.

GREATEST ADVANTAGES

Commenting on the question: "In your opinion, what are the greatest advantages of a cooperative dealer advertising plan?" 16 out of 52 manufacturers stressed the comparative inexpensiveness of this form of advertising, pointing out the considerable difference between national and local newspaper advertising rates.

Other advantages mentioned included:

"If national program is not as strong as it might be, the co-op advertising helps keep dealers satisfied.

"Is standard practice in the major appliance industry, ties in product with point of sale, ties in with dealers' merchandising events, gets more linage for dollars expended by manufacturer.

"Dealers put more promotional effort behind products advertised—tied dealers and manufacturer closer together.

"An advertisement signed by a reputable dealer is double value.

"It increases the amount of local advertising, and enables the manufacturer to get things done that the dealer would hesitate to do if he paid the entire expense."

Asked, "What is the most important thing to guard against in establishing or carrying out a dealer cooperative advertising program?" manufacturers indicated that the most troublesome problems were these three: (1) keeping costs within reason, (2) making sure that allowances were actually used for advertising, and (3) seeing to it that dealer advertising follows the general factory policy.

THINGS TO GUARD AGAINST

Said manufacturers:

"Be sure that advertising is really run and that allowance does not simply become a discount.

"Insist that the brand name be given adequate display and that copy prepared by retailer is in line with factory principles and policies.

"To see that dealer merchandises and capitalizes on his ads.

"Too often this advertising is used only for fill-in purposes by stores at times when they have no other message to get across."

Profit *now* by Using Our FACTORY SERVICE PLANS for Fractional-horsepower Motors

Under these plans, General Electric will exchange or repair any inoperative G-E fractional-horsepower motor—except extremely old or obsolete models—regardless of the type or make of appliance to which it is applied. These Factory Service Plans have already proved themselves in regular use.

HOW THESE PLANS CAN HELP YOU

They will get service business for you. The fact that you can handle motor repairs promptly and satisfactorily will attract customers.

They will enable you to give *better* motor service because you can rely on the G-E factory warranty.

They will build customer confidence in your shop, because you will be able to handle the repair of practically any G-E fractional-hp motor, and return it with a new-motor warranty.

They will reduce your service expense, because all repairs on G-E fractional-hp motors will be made at the G-E factory. You will not have to increase your personnel to handle this work.

WHAT THE THREE PLANS COVER

1. THE EXCHANGE PLAN. Covers the most commonly used types of G-E fractional-hp motors. Makes possible immediate replacement, from G-E field stocks or from your own buffer stock. Replacement motors carry the G-E new-motor warranty, except for finish.

2. SPECIAL REPAIR SERVICE PLAN. Provides for factory repair of semi-standard G-E motors not covered by THE EXCHANGE PLAN, at established prices. Enables you to make quick, accurate, on-the-spot estimates. Repaired motors carry the G-E new-motor warranty, except for finish.

3. REGULAR REPAIR PLAN. Covers motors not included in either of the other two plans, except extremely old or obsolete models. Inspection is made at the factory, and a cost estimate is submitted before work is started. These motors also carry the G-E new-motor warranty, except for finish. This plan rounds out this G-E service, and enables you to handle repairs on practically any G-E fractional-hp motor.

HOW TO GET STARTED

Your distributor has, or can obtain, complete details on how to use these Factory Service Plans. Information on prices, exchange motors, stocks, and how to obtain repair service on the motors used on your line of appliances is available. See your distributor, or write for Bulletin GEA-3989, which describes these plans in more detail. *General Electric Company, Sec. B700-69, Schenectady, N. Y.*

Every week 192,000 G-E employees purchase more than a million dollars' worth of War Bonds.

MOTORS

GENERAL ELECTRIC

OPPORTUNITY for REFRIGERATION FIELD SERVICE REPRESENTATIVE

Leading nationally-known manufacturer in refrigeration field has an opening with a real future for Refrigeration Field Service Representative. Must be familiar with both commercial and household applications, and experienced in making field trips as trouble-shooter. Should be able to handle field service correspondence with facility. In answering this ad, give complete details covering age, background, draft status and salary requirements. Replies held in strict confidence.

Address Box 1518 AIR CONDITIONING & REFRIGERATION NEWS

With Universal Cooler

JAMES PURVIS

* * *

Purvis Is Plant Chief At Universal Cooler

MARION, Ohio—James Purvis has been named plant superintendent and assistant works manager of the Marion plant of Universal Cooler Corp., announces President Frank S. McNeal, who recently named A. E. Knapp works manager.

Mr. Purvis, who came here from the engineering firm of Giffels & Valet, Detroit, has for the past several years been associated with consulting engineers.

Refrigerator Means 'Home' To Men In Marshalls

ROI, Marshall Islands—"Home," to the American fighters in this battle area at least, means a house with an electric refrigerator.

When Admiral Chester W. Nimitz visited recently this Pacific post captured only a few days previously from the Japs he found what correspondents call "some of the comforts of home" already established. A neat wooden mess hall equipped with wire screening housed a "huge gleaming electric refrigerator almost ready for use" in the Seabee area near the airfield.

U.S. Cites Savage Arms For 'Remarkable Record'

UTICA, N. Y.—Production of more than two million guns has won for Savage Arms Corp. here a citation by Ordnance officials who describe the accomplishment as "one of the most remarkable records in the production of small arms weapons."

Included in the record is the .50-calibre gun for aircraft, which General Arnold says, "enabled the Army Air Forces, the United States Navy, and the Marine Corps to show a definite superiority in aircraft gun power throughout the global war."

Savage Arms has also operated since 1925, a refrigeration division producing a regular line of ice cream cabinets.

'Keep CMP Expert on Job' Industry Asked As Success Is Cited

WASHINGTON, D. C. — Industry in the United States today is producing more finished products for war and essential civilian purposes in proportion to available raw materials than it was prior to the announcement of the Controlled Materials Plan in November, 1942, declares W. C. Skuce, director of the Controlled Materials Plan Division of the War Production Board.

"CMP, which went into operation, April 1, 1943, is now an acknowledged success after less than one year's operation," Mr. Skuce said. "Under its procedures, materials are being distributed to industry in an orderly manner, permitting high efficiency in the use of available resources."

The measure of success is found in the fact that, under its procedures, production of finished products has shown substantially greater percentage increases than the supply of basic raw materials themselves.

At the same time the available supply of the controlled materials had increased—but by much smaller percentage figures.

For example, aluminum supply during the fourth quarter of 1943 reflected an increase of 36% over the fourth quarter of 1942, while available copper increased only 5% during the same period. The quarterly supply of carbon steel increased 7% from the fourth quarter of 1942 to the fourth quarter of 1943, while the supply of alloy steel decreased 21%.

"Industry has been largely responsible for successful operation of CMP to date. Large segments of industry have put CMP on the payroll—have employed competent persons to handle the mechanism and assure that the procedures established by claimant agencies and WPB with respect to the plan are followed.

"It has been called to the attention of WPB that in some instances, personnel who have been handling CMP within industry have been shifted to other operations, leaving CMP to new personnel.

"CMP includes, for practical reasons, provision for maintenance of plant and equipment. Now, CMP has its own maintenance problem—that of maintaining smooth, efficient operation. Industry can aid greatly in assuring that this maintenance problem will bet met, through:

"1. Keeping well-trained, high-caliber executives on the CMP problems of industry and assuring that they have adequate authority.

"2. Assuring that CMP personnel who are lost through the draft or other reasons are quickly replaced with competent employes who have had adequate training in CMP operations.

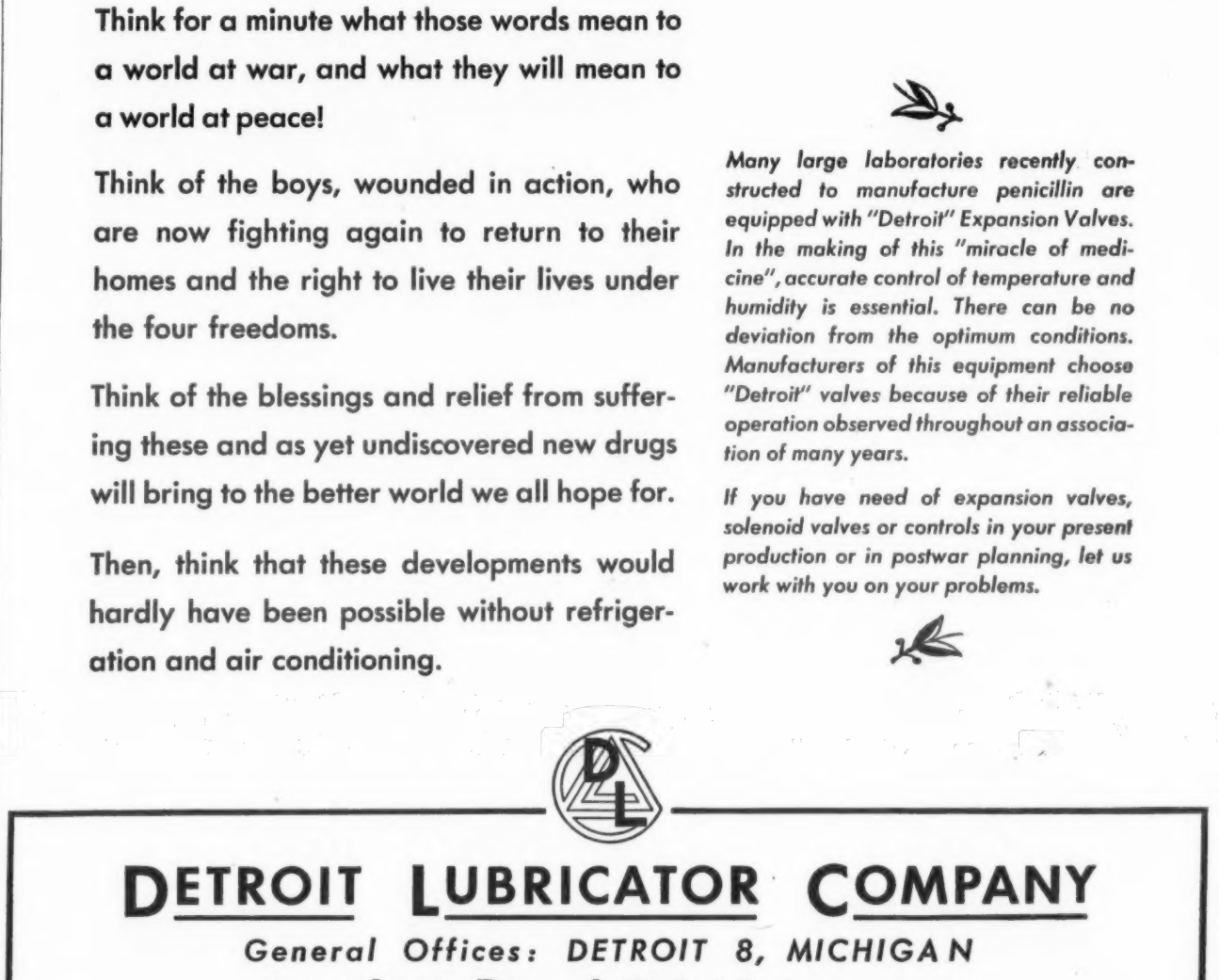
"3. Keeping WPB and claimant agency officials advised of problems which develop in connection with CMP or other material problems.

"4. Assuring that allotments of materials are promptly passed on to suppliers and that excess allotments of materials are returned.

"5. Avoiding over-allotments of materials and over-statements of requirements."

Miracles of Medicine

PENICILLIN
SULFA DRUGS
BLOOD PLASMA



Think for a minute what those words mean to a world at war, and what they will mean to a world at peace!

Think of the boys, wounded in action, who are now fighting again to return to their homes and the right to live their lives under the four freedoms.

Think of the blessings and relief from suffering these and as yet undiscovered new drugs will bring to the better world we all hope for.

Then, think that these developments would hardly have been possible without refrigeration and air conditioning.

Many large laboratories recently constructed to manufacture penicillin are equipped with "Detroit" Expansion Valves. In the making of this "miracle of medicine", accurate control of temperature and humidity is essential. There can be no deviation from the optimum conditions. Manufacturers of this equipment choose "Detroit" valves because of their reliable operation observed throughout an association of many years.

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Report of Farm Freezer Group Meeting Reveals Details of Proposed Program

Authorized Production Would Combat Black Market; Question: Who Would Be Permitted To Manufacture?

WASHINGTON, D. C.—Full report on the Jan. 19 meeting of the Farm Freezer Industry Advisory Committee has just been released by the War Production Board. (A news story about the meeting was published in the Jan. 31 issue).

Main points brought out in the discussion and proposals at the meeting were the following:

1. It was the War Food Administration that advanced the proposal that 25,000 freezers be produced and allocated to farm use in 1944.

2. Committee members expressed the hope that a program would be permitted, to halt the admittedly extensive black market in freezers.

3. Opinion was divided on the proper size of such a freezer to be made under a permitted program, with the final verdict apparently being a range of from 15 to 40 cubic feet capacity.

4. Permits to purchase such cabinets would probably come from the County Farm Rationing Committee, to whom the farmer would apply for a purchase certificate.

5. War Food Administration has followed a policy of following the manufacturers' own distribution pattern up to perhaps 80% of their production. This would probably be the policy on freezers.

6. Sterling Smith indicated that if the program were approved, production would probably be governed by Limitation Order L-38, with manufacturers being allowed to produce according to their rated orders (in this case, purchase certificates) unless they were able to fit into the present outline of L-38, which allows production up to 25% of 1940 production. Some committee members voiced objection to this, saying that they felt the program should be limited according to historical records of freezer manufacture. Permitting companies to manufacture according to the number of orders they could get would open the field to newcomers, they said.

Report of the Meeting

Purpose of the Meeting

The Farm Freezer Manufacturers Industry Advisory Committee met on Jan. 19, 1944, to discuss (1) the general status of civilian production; (2) determination of farm freezer requirements by the War Food Administration; (3) black market activities; (4) steel, copper, and component parts; (5) standardization and conservation; and (6) distribution. Sterling Smith (General Industrial Equipment Division, WPB) acted as government presiding officer.

General Status of Civilian Production

Sterling Smith told the committee that, although WPB may allow a few necessary relaxations from the strict war production program from time to time, these relaxations do not represent the beginning of reconversion. Some programs have been cut back, but many other programs, such as the landing craft program, are being increased tremendously and the aircraft program is still expanding.

He cautioned the committee against over optimism regarding early production of farm freezers; a policy recently adopted by WPB provides that there shall be no resumption of production of civilian items that are now prohibited until the success of the European invasion appears assured. Thus, if a farm freezer program is approved, it is doubtful whether it could possibly begin before the third quarter.

Determination of Requirements by The War Food Administration

David Meeker (War Food Administration) told the committee that the War Food Administration is responsible for the production, storage, transportation, and distribution of food, in conjunction with WPB, the Office of Defense Transportation, the Department of Agriculture, and other agencies having collateral responsibilities.

In discussing the over-all food picture, Mr. Meeker said that the United States is still the best-fed nation in the world. Dire forecasts made in 1943 concerning the food supply have not materialized. However, because of the tremendous demands now being made on American food producers, the situation is definitely not easy, especially in some categories of food production. Mr. Meeker believed that food demands will continue heavy during the rest of the war and for some time following it; thus, careful management of the food supply is absolutely necessary.

It is this situation which has occasioned the War Food Administration's interest in the farm freezer program, Mr. Meeker continued. He believed that the production of farm freezers can provide an opportunity for the conservation of a great amount of food which would otherwise be wasted.

The part of the War Food Administration in the inauguration of the farm freezer program is to submit its requirements, screened carefully and presented reasonably, to WPB. The ultimate decision rests with WPB, which must determine whether the program is possible and, if so, how production can best be managed.

The War Food Administration has recently proposed to WPB the production of 25,000 freezers to be allocated to farm use. This figure, Mr. Meeker said, was arrived at after careful consideration of a number of factors — among them, 1944 food needs, industry capacity, the labor supply, and the situation in regard to critical materials and component parts.

Black Market Activities

Committee members voiced the hope that a farm freezer program, even through limited, would help to stop the present black market in freezers. They agreed that the black market is at present extensive and rather open.

Sterling Smith commented that, although the industry division has heard much about the illegal building of new farm freezers and conversion of milk coolers and other equipment into freezers, only recently has sufficient definite information been provided the division so that it could turn specific cases over to the Compliance Division for investigation. Mr. Smith said that the Compliance Division has promised to stop violations as fast as these are referred to it.

He emphasized that the industry itself has a great responsibility in this matter and should cooperate with the government by notifying WPB of violations. Complaints may be made to the nearest regional WPB office or to the industry division in Washington.

Sterling Smith pointed out that the recent amendment to L-38 should be of some help in stopping black market activities, as this amendment attempts to control the leakage of condensing units to black market operators. The order now provides that a manufacturer must have a rating actually in hand before he can deliver.

Similarly, the compressor manufacturer must have the rating which is extended to him actually in hand before he can deliver a compressor. Prior to Dec. 6, Mr. Smith pointed out, a manufacturer of condensing units could sell his products to any dealer and had no further responsibility in the ultimate use of the units; he was not responsible if his customer subsequently sold the units illegally.

Mr. Smith believed that there has also been some leakage of condensing units to black market operators through MRO orders.

Steel, Copper, and Component Parts

Mr. Smith told the committee that, although the steel and copper situations have eased considerably, there are still tight spots in both materials. A tight situation exists at present in sheet steel because of military programs. Several bottlenecks are also apparent in component parts, but it is hoped that these may improve. The aircraft program is taking large quantities of fractional horsepower motors, but facilities for these are being expanded.

Standardization and Conservation

Sterling Smith said that WPB, in changing present schedules, is not over emphasizing standardization and simplification but is encouraging the use of such materials as are available to build the best products possible. WPB does not wish to force industry into narrow prescribed channels, particularly since restrictions on materials and on other production factors sometimes make the maximum utilization of manpower impossible.

A number of industry members believed that there should be at least a minimum size restriction and possibly other restrictions. One industry member pointed out, however, that minimum restrictions would freeze a certain amount of equipment throughout the industry.

J. Driggs (War Food Administration) believed that, although unit-by-unit distribution would be perfectly possible, this procedure would be considerably complicated if no standardization were adopted.

Fred W. Smith (General Industrial Equipment Division, WPB) suggested that the profit factor would inevitably bring about a certain standardization.

Government representatives solicited an opinion on this matter from each member of the committee. One industry representative believed that restrictions should be on a minimum basis but that manufacturers should be allowed to produce as large freezers as they wished to make and could get materials for. He suggested that the minimum size should be 20 cubic feet.

A second manufacturer suggested a minimum size of 15 cubic feet and a maximum size of 25 cubic feet. Five other members of the committee agreed with this opinion. They pointed out that, as this is an emergency program, it is desirable to get the greatest amount of capacity in the field and to get it distributed with some degree of fairness; this they believed, could best be done under these limitations.

One committee member doubted that many farmers can afford larger

(Concluded on Page 11, Column 1)

A Flood of Inquiries
came from distributors
about the new

FREEZ-ALL
HOME FREEZE FOOD CABINET

An unprecedented number of inquiries were received in response to a recent mailing. The hundreds of replies received were definite proof that (1) Freez-all plans were highly interesting to distributors (2) the over-all interest in home frozen food cabinets of this type is immense.

We are now franchising distributors for Pelco Freez-all Food Cabinets all over America. If you have not yet sent a request for information we invite you to do so. Prices-discounts-models-pictures will be forthcoming immediately.

PELCO FREEZ-ALL FOOD CABINET Bloomington, Ill. U. S. A.

Portable Elevator Mfg. Co.
224 McClun Street
Bloomington, Illinois

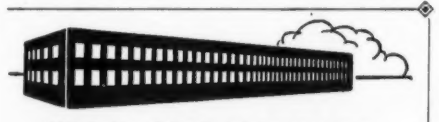
Please send literature, market data, promotional plans and other interesting information on the PELCO FREEZ-ALL food cabinet.

Company .....

Address .....

Executive .....

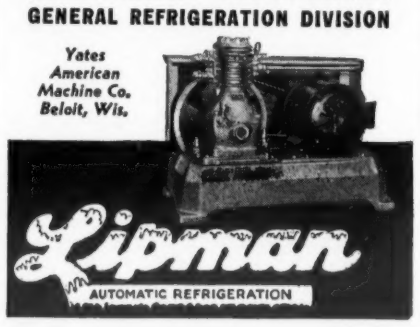
Freez-All food cabinets and Pelco coolers are manufactured by the Refrigeration Division, PORTABLE ELEVATOR MFG. CO., Bloomington, Illinois.



WAR INDUSTRIES NEED REFRIGERATION

The use of refrigeration in industry has been greatly accelerated by the war. In peacetime this expansion may logically be expected to continue. Write for literature.

GENERAL REFRIGERATION DIVISION



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In hot weather, reducing the head pressure from 195 lbs. to 165 lbs. adds 10% to 15% extra capacity to your refrigeration system.

Users of the Niagara Aero Condenser, with the new patented Duo-Pass, have gained such advantages—and have saved from 15% to 35% of power, and 95% of water, consumed by present equipment.

These savings are permanent, because the Duo-Pass pre-cooling prevents clogging of condenser tubes with scale; inexpensively gained because the Aero Condenser replaces both cooling tower and shell-and-tube condenser.

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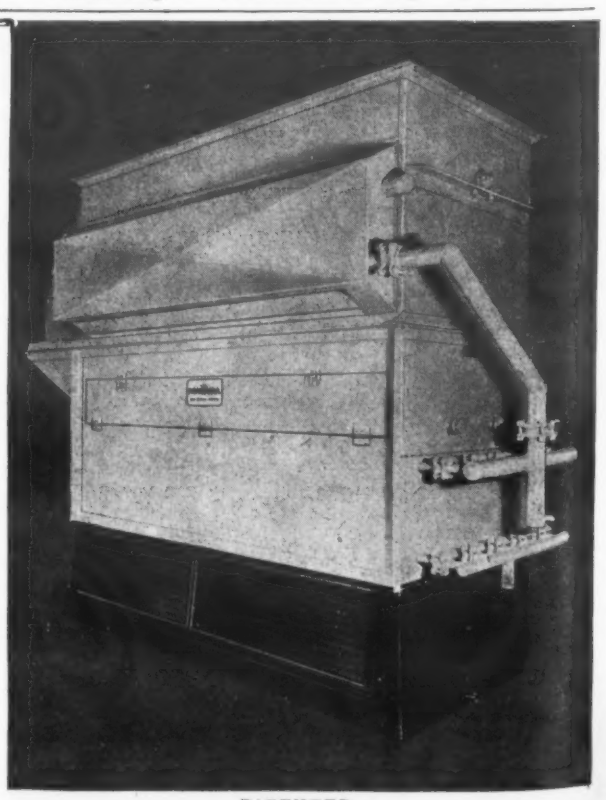

PATENTED

NIAGARA EQUIPMENT FOR FOOD INDUSTRIES: AIR CONDITIONERS, DEHYDRATORS, COOLERS, "NO-FROST" METHOD OF PRE-COOLING, FREEZING AND HOLDING, AERO HEAT EXCHANGERS, "DUO-PASS" AERO CONDENSERS

Size of Cabinet, Distribution Of Farm Freezer Discussed

(Concluded on Page 10, Column 5)

freezer than the 25-cubic-foot size and believed that larger freezer would probably not be used according to the intentions of the War Food Administration.

Another manufacturer believed that very small sizes are likely to go elsewhere than into the farm home. In the western part of the country, where distances are great, the 40-cubic-foot size is considered most successful, he said.

Fred W. Smith suggested a plan whereby farm freezers would be permitted in sizes from 15 cubic feet to 40 cubic feet. Freezers larger than 40 cubic feet would be considered cold storage equipment and would not be included under the farm freezer program. The general restrictions in L-38 would apply to these large sized freezers; a manufacturer would be permitted to manufacture one if his customer presented an AA-5 rating, which could be secured by filing WPB-2548.

Although freezers from 15 cubic feet to 40 cubic feet would be permitted under the farm freezer program, each manufacturer would be asked to confine his production to two sizes according to the types needed in his particular part of the country. Mr. Smith believed that these could include either processing or storage space, or both. The temperature would have to be below freezing in either type of compartment.

Mr. Smith emphasized that the sizes he had mentioned in outlining the above plan could be changed if other sizes were found to furnish more practical limits.

The industry members favored this plan and recommended that it be adopted.

Distribution

Mr. Driggs said that because of the limited supply of freezers which would be available under this program, a problem of distribution would inevitably arise. The War Food Administration, he said, is willing and able to assume the responsibility of distribution, as it now has the field machinery necessary to accomplish this type of distribution. In answer to an industry question, Mr. Driggs said that priorities would probably not be used, as all War Food Administration rationing is done on a purchase certificate basis.

The farmer would present his case for a freezer to his county farm rationing committee, which would decide whether or not to issue him a purchase certificate on the basis of some fairly definite criteria which would be furnished by the War Food Administration. Mr. Driggs had confidence in the operation of these committees and believed that through them an equitable job of distribution could be done.

The suggestion was made from several sources that the farmer who has locker plant facilities should not be allowed a freezer. An industry member pointed out, however, that farmers seldom have the economic ability to buy more facilities than they need. Mr. Driggs believed that this matter could be left to the discretion of the individual committees. These committees, in most cases, are fully familiar with the situations of the farmers who appeal to them and are able to make just judgments in matters of this kind.

Mr. Meeker said that in other commodities the War Food Administration has followed a policy of following the manufacturers' own distribution patterns up to perhaps 80% of their production. A reserve is set up with the other 20% to meet emergency situations. Although distribution is legally under the control of the War Food Administration, it is frequently worked out in cooperation with the industry.

In discussing distribution of the program among manufacturers, Mr. Sterling Smith said that production will probably be governed by L-38; manufacturers would be allowed to produce according to their rated orders (in this case, purchase certificates) unless they were able to fit into the present outline of L-38, which allows production up to 25% of 1940 production. He did not consider it advisable to distribute this type of program in quotas to manufacturers. Mr. Smith called attention to the fact that distribution among manufacturers would be affected by the restrictions on civilian manufacture in critical labor areas.

Several committee members saw some objection to the plan as outlined by Mr. Smith. They felt that participation in the program should be limited according to historical records of freezer manufacture. Allowing companies to manufacture according to the number of purchase certificates they could get would open the field to a great many new manufacturers and would expose the consumers to a period of experimentation, they said.

Government representatives believed, however, that an historical base cannot be adopted in this case because of the newness of the industry.

It was decided to defer discussion of this point until more is known about the possibility of the program's being put into effect.

3,100 Ships Equipped With York Refrigeration & Conditioning Units

YORK, Pa.—Marine refrigeration and air conditioning equipment for more than 1,100 U. S. cargo ships and 2,000 naval vessels from battleships to fleet tugs is now being produced by York Corp., reports S. E. Lauer, president. This represents a 44% increase in the company's volume of marine business in a 12 months' period.

A major part of this equipment, valued at $12,300,000, has been refrigeration for Liberty ships, more than 1,000 of which have been equipped since Pearl Harbor, Mr. Lauer said. Recent contracts call for similar installations on 133 of the new Victory ships.

Air conditioning for all types of fighting ships, including aircraft carriers and submarines, has been the most urgently needed of York's marine production. By now, the entire U. S. submarine fleet has been outfitted with cooling equipment to prevent temperature and humidity from rising to a point where normal working efficiency is impaired. Lacking air conditioning, the modern sub with its increased amount of machinery and accessories would be limited to much shorter periods of operation underwater.

Development of new sensitive detection devices and fire control mechanisms has made air conditioning essential for nearly all modern fighting ships. Instrument and fire control rooms must be conditioned to protect both the delicate apparatus and the men who operate it against natural and artificial heat.

Another use of air conditioning is in the ready rooms of aircraft carriers where pilots assemble in heavy gear to receive their last-minute flying instructions. In warm climates where temperatures soar above 100°, these rooms are cooled to make the wait bearable.

In both the Navy and the Marchant Marine, advances in refrigeration equipment design, development of quick-freezing methods and improved storage techniques have now made it possible to maintain a more continuous supply of fresh foods for ships crews at little increase in refrigerated area, it was pointed out. Modern refrigerants in smaller, more efficient compressors have contributed to this development. Quick frozen foods, packaged and made compact by removing excess bulk have also helped.

Ice Cream for the Aleutians

Somewhere in the Aleutian Islands Sgt. Harold Greenberg (left) and Sgt. Wm. DeVaux pose proudly before the 1,000-gal. capacity ice cream plant which Sgt. Greenberg recently installed. Sgt. DeVaux manages the plant.

Formica '43 Production Tops '42 by 45%

CINCINNATI — The Formica Insulation Co., manufacturers of laminated plastic products, practically 100% of which is for war materials and the largest part going into aircraft, attained a 45% increase in production for 1943 compared to 1942, D. J. O'Conor, president of the company disclosed in a "1944 year opening" report to employes.

Complimenting the employes on the production lines for "efforts, skill and cooperation" during the year, Mr. O'Conor urged the workers in 1944 to "come to work every day and on time, increase output even further and expand production to greater heights by eliminating bad workmanship."

Mr. O'Conor told the workers in his statement that "from present indications we will be expected to continue to produce at an even higher rate as long as the war continues."

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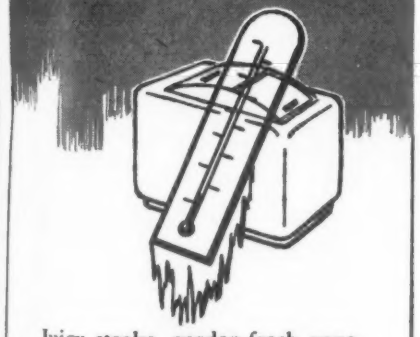
...IN POST-WAR AMERICA BY THOUSANDS OF AMERICANS EVERYWHERE



Juicy steaks, garden-fresh vegetables, fish, wild game and ice cream will be frozen in Sherer Freezers by thousands of Americans on farms, in stores, and rural homes the country over. These freezers, and display refrigerator cases of all kinds will be available when restrictions are removed — reach-in refrigerators, walk-in cooling rooms, Vegetaires, and other commercial refrigeration products, as well as the Sherer Distributor franchise are available *now*.

Don't let war's end catch you napping! Get set for the profitable post-war market by availing yourself of this opportunity to distribute Sherer's complete Commercial Refrigerator line. Write or wire for details.

SHERER GILLETT CO.
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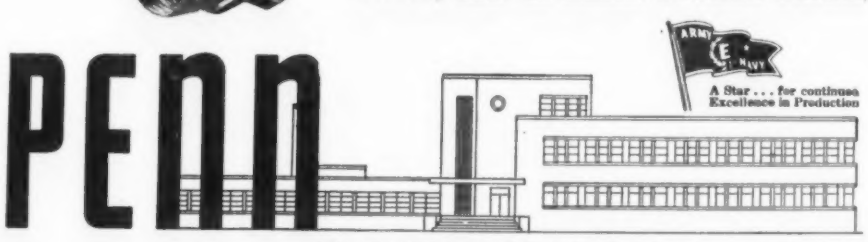
6 STAR FEATURES OF PENN'S NEW WATER VALVE

New...revolutionary...inherently different in design...a post-war water valve *now!* Available in threaded or flange type, Penn Series 246 Water Regulators introduce higher standards of efficiency, dependability and performance. For complete information, without obligation, write now for illustrated Bulletin R-1986. *Penn Electric Switch Co., Goshen, Ind.* In Canada: Powerlite Devices, Ltd., Toronto, Ont.

PENN



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5229 Cass Ave., Detroit, Mich.
Telephone Columbia 4242

Subscription Rates
U. S. and Possessions, Canada, and all countries in the Pan-American Postal Union: $4.00 per year; 2 years for $7.00. All other foreign countries: $6.00 per year. Single copy price, 20 cents. Ten or more copies, 15 cents each; 50 or more copies, 10 cents each. Send remittance with order.

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VOLUME 41, NO. 9, SERIAL NO. 780
FEBRUARY 28, 1944
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1944 Red Cross War Fund

WHEN bombs fall, there is no time to send help half way around the world. When a badly wounded fighting man needs a transfusion, it is too late to begin looking for a blood donor or find a nurse to care for him. When a lonely soldier learns of trouble at home, he needs help—immediately.

The American Red Cross provides that help wherever and whenever the need arises. A continuous procession of blood donors must be maintained, nurses must be recruited for the Army and Navy, trained Red Cross workers and supplies must be sent to camps, hospitals, and foreign theaters of operation the world over.

When a train crash leaves scores injured, when flood engulfs a town, when epidemic strikes, delay may cost lives. Red Cross disaster relief and medical supplies, held in readiness for such emergencies, plus trained workers to rescue and assist victims and help in their rehabilitation, will prevent delay and thus save many lives.

RED CROSS NEEDS MORE HELP THAN EVER THIS YEAR

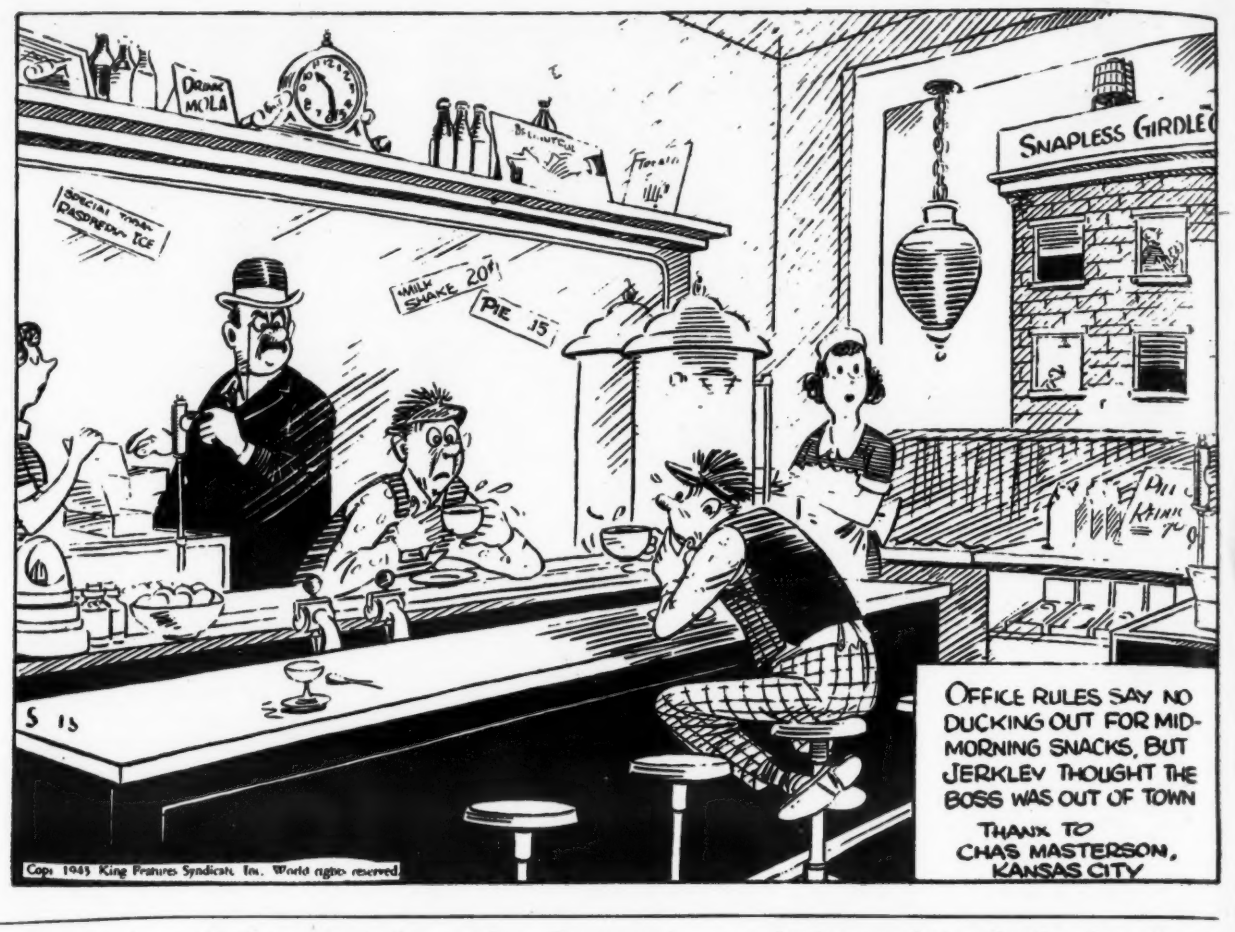
To fulfill its many obligations to the armed forces and our people, the American Red Cross needs your help. During 1944 it must supply some 5,000,000 blood donations. Each month 2,500 nurses must be recruited for the Army and Navy. Red Cross field directors and other trained personnel must be stationed at military and naval posts and hospitals to help our fighting men and their families when personal trouble brews, a task in which the Red Cross chapter on the home front ably does its share.

At home the Red Cross must continue to maintain a state of alert. Disasters must be met as they occur. Nurse's aides and first aiders must be trained and other educational projects continued. Food parcels for distribution to prisoners of war must be packed, surgical dressings made and the thousand and one details of administering a far-flung, busy organization must be attended.

All activities of the American Red Cross are financed by voluntary gifts and contributions. During March, designated by President Roosevelt as Red Cross Month, the American Red Cross must raise its 1944 War Fund of unprecedented size to meet unprecedented needs. Your contribution will assure maintenance of all Red Cross services and thus indirectly help save many a life. Let's give!

They'll Do It Every Time

By Jimmy Hatlo


SNAPLESS GIRDLE
MILK SHAKE 20¢
PIE 15
OFFICE RULES SAY NO DUCKING OUT FOR MID-MORNING SNACKS, BUT JERKLEV THOUGHT THE BOSS WAS OUT OF TOWN
THANX TO CHAS MASTERSON, KANSAS CITY
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LETTERS

RECEIVES HIS FIRST ISSUE; ASKS HIS FIRST QUESTION

Newman's Refrigeration Service
164 West Columbia
Battle Creek, Mich.

Editor:

We have received our first copies of the NEWS, and must say they are certainly fine. They really cover the industry completely. I don't see how anyone in the business can afford to be without it.

We are contemplating building a locker plant with a capacity of about 1,000 lockers, and would appreciate very much any information you could give us in regard to the proper authorities to consult in seeking priorities.

Gene Newman

Answer: The news story on page 1 of the Jan. 3 issue of the NEWS gave a complete outline of the procedure for new locker plants in 1944.

We understand that the necessary WPB forms can be obtained from the nearest WPB office, and that the other forms can be obtained from the state or county office of the Agricultural Adjustment Agency or from the War Food Administration, Washington 25, D. C. Any questions that you may have should be addressed to the War Food Administration at Washington.

HERE'S ONE WAY FOR GOV'T TO SELL SURPLUS MATERIAL

Refrigeration & Air Conditioning Assn.
626 Broadway, Cincinnati, Ohio

Editor:

The attached is a copy of letters mailed this date to Congressmen Charles H. Elston and Wm. E. Hess, and to Senators Harold H. Burton and Robert A. Taft, which we hope will receive some consideration.

A. BACHMAN, *Secretary.*

Honorable Charles H. Elston
Member of Congress from Ohio
Washington, D. C.
Dear Congressman:

The purpose of this letter is to call to your attention the injury which might accompany the wrong method of marketing "Excess Government Owned Materials" and suggesting a plan to avoid this injury.

At the present time various Government Agencies are disposing of new and used excess materials by taking bids and awarding to the highest bidder. This plan is attractive to brokers, speculators and second-hand dealers who buy at very low prices and sell at enormous profits. This is possible at this time because enough of these materials cannot be manufactured on account of the war. W.P.A. rubber tired wheelbarrows are offered for sale in Cincinnati at this time at prices higher than the selling price during normal conditions. The dumping of enormous quantities of materials will make it impossible for manufacturers of these materials to get back into their regular lines after the war. How are these manufacturers going to be able to employ the returning armed forces unless they can have something to manufacture which can be marketed? What is to be done in the interim?

Our suggestions follow:

1. Dispose of as much of these materials as possible to our allies and ship it out of the country under Lend-Lease or any acceptable plan and wherever possible accept non-competitive raw materials in payment.

2. Dispose of all of the remaining excess materials as soon as possible through the same channels from which it was purchased at a very liberal discount to cover storage, insurance, etc., to be sold under the priority system until the end of the war. Establish a ratio for manufacturers to dispose of government excess materials in proportion to new materials manufactured after the war.

Such a plan would have several desirable results:

1. Government would receive better prices which would help liquidate part of the national debt.

2. Reduce inflationary pressures.

3. Tide the public over the reconversion period.

4. Remove worry of speculator competition from large segments of private enterprise.

5. Provide an equitable distribution of needed materials to the public.

6. Help keep established wholesalers and dealers in business in a healthy condition.

7. Prevent brokers, speculators and second-hand dealers from demoralizing industry.

Immediate action by Congress will be necessary if we are to avoid the mistakes following World War I.

Assuring you of our desire to be of service during and after the war and awaiting your further commands, we remain,

Refrigeration & Air Conditioning Assn.
A. BACHMAN, *Secretary.*

'THE RIGHT CHURCH, BUT THE WRONG PEW'

Bender Electric Co.
Carrolltown, Pa.

Editor:

We read your editorial in Dec. 6 issue of AIR CONDITIONING & REFRIGERATION NEWS on the subject of "keeping surplus materials away from speculators" in which you agree with our idea that military over stock should not be dumped but should be put back into regular sales channels for the particular surplus article.

In this connection we attach herewith copy of a letter put out by the Army Exchange Service in New York City which is self-explanatory.

You will note that this letter was sent to brewers who sell beer rather than to factories or distributors who sell refrigeration equipment. In our opinion this is the same thing that will occur if they should send the refrigeration business a letter advising they had a surplus beer supply to sell rather than attempting to dispose of it to a brewer in the business.

We are sending you this letter for what it is worth.

B. A. BENDER.

New Dispensing Equipment for Sale—We quote herewith verbatim, a letter Dec. 21, by J. G. Hitchcock, Captain, A. U. S., Requirements and Allocations Division, Army Exchange Service, 25 W. 43rd St., New York 18, N. Y.

"Army Exchange Service has a considerable balance of beer cooling and dispensing equipment on their Special Purchase Contracts, and inasmuch as it is the desire of this office to dispose of this equipment, to civilian operators, the thought occurred that, if brewers were notified of this condition through your bulletin, final disposition could be made.

"The equipment consists of the following:

"Direct draw beer dispensers with precooling storage capacity for 2, 3 or 4 half barrels all with self contained units for 110-220 volt 60 cycle, A.C.

"Beer line systems consisting of 6' x 9' walk-in precoolers with refrigerated water lines and tap stands all with condensing units for 110-220 vole 60 cycle, A. C.

"Walk-in precoolers, approximately 6' x 6' with condensing units for operation 110-220 vole 60 cycle, A. C.

"Under-counter precoolers of 3, 4 and 6 half barrel capacity all with remote condensing units for operation on 110-220 volt 60 cycle, A. C.

"All of this equipment is new in the original crating and is held at manufacturer's plants under our purchase contract. Exchange demand has not materialized for it and Army Exchange Service will dispose of it at cost which is distributor's price in most instances and, therefore, considerable less than individual operators could normally purchase it.

"In distributing this information it is suggested that any interested parties be directed to communicate with this office, Attention of Capt. Pierce."

INFORMATION, PLEASE; AND THE ANSWER

Department of Commerce
Washington, D. C.

Editor:

Do you have any information on file regarding a sheet metal covered 50 cu. ft. portable low-temperature refrigerator which has been developed fairly recently for shipping perishable commodities into the tropics? Connections permit the box to be plugged into the carriers electrical circuit.

The Bureau publication "Foreign Commerce Weekly" carried an item about such a refrigerator in the Sept. 18, 1943 issue, but we have no record of the manufacturer's name. We have several requests for this information and would appreciate having any data you can supply.

Wm. L. Beck,
Machinery & Motive Products Unit

Answer: This 50 cu. ft. portable refrigerator for shipping perishable commodities is probably the Church LCL refrigerated container. Information concerning this product may be obtainable from General Electric Co., Schenectady, N. Y.

THANKS!

Associated Refrig. Service
Oakland, Calif.

Editor:

You are doing a swell job!

R. B. BAKER

Inside Dope

By George F. Taubeneck

(Concluded from Page 1, Column 1)

To those who expect calamitous casualties, based on experiences at Dieppe and Tarawa, we submit just this statistic: to hold the Atlantic seawall against Allied invasion on the Tarawa scale, the Nazis would need to post four and one-half millions of combat troops behind and within one-mile deep fortifications. The Nazis don't have half that many men available for the task.

Then and Now

There is no better way to underscore the importance of refrigeration on United States fighting ships than to compare Navy rations 100 years ago with those of today, R. L. Tomlinson, manager of the Marine Division of Carrier Corp. showed us recently.

In 1842, the Navy ration was "improved" over the one that had formerly been served, Mr. Tomlinson said, quoting the following from a service document:

"One pound of salted pork with half a pint of dried peas or beans; or one pound of salted beef, with half a pound of flour, and a quarter of a pound of raisins, dried apples, or other dried fruits; or one pound of salt beef with a pound of rice, two ounces of butter, and two ounces of cheese; together with 14 ounces of biscuit; one quarter of an ounce of tea, or ounce of coffee, or one ounce of cocoa; two ounces of sugar; and one gill of spirits; and a weekly allowance of half a pound of pickles or cranberries, half a pint of molasses, and half a pint of vinegar.

"Fresh meat may be substituted for salted beef or pork, and vegetables or sauerkraut for the other articles usually issued with the salted meats, allowing one and a quarter pounds of fresh meat for one pound of salted beef or pork and regulating the quantity of vegetables or sauerkraut so as to equal the value of those articles for which they may be substituted."

This can be compared with the following typical menu served today aboard a battleship on a weekday:

BREAKFAST: Chilled fresh oranges, assorted dry cereals, milk baked pork sausage, creamed diced potatoes, apple cake, bread, butter and coffee.

DINNER: Cream of split-pea soup, pot roast of beef with brown gravy, oven-baked potatoes, steamed string beans, marble cake, bread, butter, coffee or tea.

SUPPER: Boiled spaghetti with fresh meat balls, Spanish sauce, steamed succotash, hot spiced beets, fresh hermits, bread, jam and cocoa.

"Actually more than one-half of the 10,000 to 12,000 pounds of food consumed daily abroad a modern battleship is taken from cold storage," Mr. Tomlinson pointed out.

"Freezer storage aboard ship is used primarily to hold meats, fish, poultry and butter. The chill rooms hold such items as fresh vegetables and fruits, eggs and cheese. Although dehydrated and canned products are being used more extensively than before the war in order to conserve space, even now a large proportion of the ship's food must be held under refrigeration. As a matter of fact, some of the dehydrated foods, particularly powdered eggs, require refrigeration if they are to be held for any length of time.

"Modern ships maintain low enough temperatures in at least one compartment to carry quick frozen fruits and vegetables. The use of these items will no doubt increase in the future as more ships have the space available to carry them properly.

"While the main function of refrigeration aboard ship is the preservation of food, yet the use of ice machines in the production of ice for cold drinks for the general mess is significant."

Naval Poesy

Walter Bowe, alive purveyor of Carrier information, happened to pick up a bit of spontaneous verse the other day. This doggerel comes from the pen of Bill Driscoll, a Carrier Vice President. It was concocted for the graduates of Carrier's Navy Refrigeration School.

When I was but a little lad my father said to me,
Don't try to be a sailor son, if you expect to go to sea
For sailors nowadays my boy don't sail the bounding main
Until they've spent long years in school to exercise their brain.

They study math and science and world geography
Until there's room for little else—except some blasphemy.

The reason that they cram their minds with higher education
Is the hope that some day they may even grasp refrigeration.

Which, as you know, on colored charts, looks like a simple system
But on a ship can raise such hells, that you can hardly list 'em.

At times you'd surely think, there was a gremlin in each gadget
And you'd like to smash the goldang thing with a sharp and heavy hatchet.

It will plug up here, or freeze up there, and nearly drive you nuts
Or a slug will make it pound and shake like a bad pain in its guts.

There are many other things of course that can bring on lots of grief
But I cannot cover all of them and keep this story brief.

So if you've checked up carefully and think everything's all right
The current on, the switches set, and all the valves made tight
The condenser water flowing free and an ample charge of gas
Then if you can't make the damn thing run you should be kicked out on your fanny.

HERE IT IS WILL BE READY APRIL 15 **NEW CATALOG**

ANNOUNCING NEW LINE WASHING MACHINE PARTS AND SUPPLIES

MOTOR PARTS
DELCO—SUNLIGHT
WAGNER

REFRIGERATION PARTS AND SUPPLIES
100% WHOLESALE

REFRIGERATION
HERMETIC REBUILDING
GRUNOW—MAJESTIC
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WESTINGHOUSE

SERVICE PARTS CO.
2511 Lake St. Melrose Park, Ill.

MEN, INDUSTRIES AND NATIONS DEPEND ON REFRIGERATION ACCURATELY CONTROLLED

Making molecules "sluggish"

IT'S difficult for the uninitiated to regard a sheet of metal as anything but a hard, static, inert weight — not the living, molecular structure, the activity of which the metallurgist must learn to control. Retarding this molecular activity is often necessary, that metal may be worked, bent, formed, riveted before "aging" makes it too hard. Modern refrigeration is a ready servant for the metallurgist here, doing duty in many different ways, at a wide variety of low temperatures, depending on the character and the use of the metal.

Industrial refrigeration, serving the precision requirements of production today, demands the extremes in accurate control. It's one of the many tasks so well suited to A-P DEPENDABLE REFRIGERANT VALVES, whose reputation for accurate, supersensitive refrigerant control has been built on successful operation of all types of refrigeration today.

There's promise here for greater progress in years to come . . . new applications for mechanical refrigeration now on the drawing boards of many post-war planners. The A-P research staff will have a hand in this future development. They invite you to use their knowledge and facilities to bring YOUR future plans to perfection.

AUTOMATIC PRODUCTS COMPANY
2450 N. Thirty-Second St. • Milwaukee 10, Wis.
Export Dept.: 15 E. 40th St., New York 16, N. Y.

Thermostatic Expansion — Solenoid — Constant Suction Pressure — Water Regulating Valves — "Trap-Dri" System Protectors — Water Solenoids — Cooling Thermostats.

DEPENDABLE
REFRIGERANT VALVES

STOCKED AND SOLD BY PROGRESSIVE REFRIGERATION JOBBERS EVERYWHERE
—USED AND RECOMMENDED BY LEADING SERVICE ENGINEERS

OPA Sets Up Maximum Pricing Method For Used and Reconditioned Appliances

WASHINGTON, D. C.—Maximum prices on certain used consumer durable goods, including portable room coolers of 1-hp. or less, small electrical appliances such as irons, fans, space heaters, heating pads, etc., and domestic cooking and heating stoves except gas ranges, were established by the Office of Price Administration in Maximum Price Regulation 429.

MPR 429 does not affect price ceilings on used household refrigerators, vacuum cleaners, and washing machines, which are already covered by other regulations.

Under the new regulation ceiling prices on the specified used goods, including reconditioned, rebuilt, and renovated articles, are based on a percentage of the retail selling price of a new article which is the same as or similar to the used article being priced.

All sales by any person to any other person are covered by MPR 429 with the exception of the following: Sales by a householder who originally purchased the goods for his own use; sales by the War Department, Navy Department, or the Treasury Department's Procurement Division; and sales at wholesale.

Sellers of these used consumers goods are warned that the regulation prohibits sales to a customer at the ceiling price with the provision that the customer will pay extra for reconditioning, repairing, or rebuilding performed after the sale.

"If the customer buys an article from you, and asks you to rebuild or recondition it, the total amount which you receive on account of the sale of the goods and on account of the reconditioning or rebuilding cannot exceed the ceiling price of the goods if you offered the goods for sale as Class I goods," states the regulation.

Determination of the ceiling price on used articles is explained in the following excerpt from the text of the order:

Sec. 5. **How to determine your ceiling prices.** (a) First, you must find the price of a new article (which is the same as or similar to the used article you are pricing), according to the rules in section 6.

(b) Second, you must find the class in which the used article you are pricing belongs. (Class I or Class II—See section 7).

(c) You then find your ceiling price which is either ¾ or ⅓ of the price of the new article, depending on the class in which the used article you are pricing belongs.

Sec. 6. **How to find the price of the new article.** You find the price of the new article by using these rules in the order in which they appear:

(a) **Rule 1.** Find the retail selling price of the same article, new, for sale in your own stock.

(b) **Rule 2.** If you do not have the same article, new, in stock, find the retail selling price of a similar article, new, in your own stock. A used article is "similar" to a new article if the used article has the same uses and when new would give fairly equivalent service. In addition, the used article, when new, must have sold for approximately the same price as the similar new article now sells for.

(c) **Rule 3.** If you do not have a similar article, new, in stock, find the retail selling price of the same article, new, in the same shopping area. (The shopping area is the area in which persons in your community shop for new goods of the kind you are pricing).

(d) **Rule 4.** If the same article, new, is not for sale in the same shopping area, find the retail selling price of a similar article, new, for sale in the same shopping area. A used article is "similar" to a new article if the used article has the same use and when new would give fairly equivalent service. In addition, the used article, when new, must have sold for approximately the same price as the similar new article now sells for.

(e) **Rule 5.** If the same or similar article is not being sold in your community, find the retail selling price when this article was last sold in your community.

(f) **Rule 6.** If you cannot find the retail selling price under any of these Rules above, apply to the appropriate Office of Price Administration District Office, for information on how to determine your price.

Remember, if you can find the price of the new article in Rule 1, you cannot use Rules 2, 3, 4, 5, or 6. If you can use Rule 2, you cannot use Rules 3, 4, 5, or 6. If you can use Rule 3, you cannot use Rules 4, 5, or 6. If you can use Rule 4, you cannot use Rules 5 or 6.

Sec. 7. **How to determine the class of a used article**—(a) **Class I.** An article is a Class I article if:

(1) No part is missing which is necessary to make the article fully useful.

(2) The article is in good working condition, can be used by the consumer for the purpose intended without further repair, and the article is clean and its appearance is good.

For example: In the case of floor covering, upholstered furniture and bedding, the fabric must be clean and substantially free from burns, cuts, tears, stains, frayed edges, faded colors, and worn spots.

(b) **Class II.** An article is a Class II article if it is not in Class I.

Sec. 8. **How to find the ceiling price for each class.** The ceiling price for the used article must be no more than:

Class I, ¾ (75%) of new.

Class II. ⅓ (33⅓%) of new.

Example for Class I: If the selling price of a new article is $40, you determine the ceiling price of the used article by multiplying $40 by 3 and dividing the result by 4; 3 times $40 is $120; $120 divided by 4 is $30; $30 is the ceiling price for the Class I used article.

Example for Class II: The selling price of the new article is $30. To determine the ceiling price of the used article, you divide the $30 by 3; $30 divided by 3 is $10. This is the ceiling price for the Class II used article.

No sales, attempts to sell, offers to sell or deliveries shall be made at prices higher than the ceiling price. Of course, sales may be made at lower than ceiling prices.

(Sec. 8 as amended by Am. 1, 8 F.R. 13742, effective 10-5-43).

Sec. 9. **Fixing of dollars-and-cents ceiling prices for certain articles by Regional or other offices of the Office of Price Administration.** Any Regional Office of the Office of Price Administration or such other offices as may be authorized by the appropriate Regional Office, may by order fix dollars-and-cents ceiling prices for the sales of any articles covered by this regulation in any area or locality within its jurisdiction. Any order fixing maximum prices issued under the authority of this provision will supersede the provisions of this regulation with respect to sales subject to such order.

Sec. 10. **Adjustment of prices under certain circumstances.** Any regional office of the Office of Price Administration or such other offices as may be authorized by the proper regional office may grant permission to any person subject to this regulation to charge a higher price for the sale of any rebuilt or reconditioned article than is permitted by this regulation if it is found that:

(a) The article is essential, and is one of which there is a serious shortage.

(b) There has been expended (in the course of rebuilding, reconditioning, or renovating the used article) a substantial amount for labor and materials.

(c) Considering the substantial amount expended for labor and materials, the establishment of a price by the Class I formula would result in a price so low that he could not reasonably be expected to continue to recondition or rebuild the article.

For further information consult with your nearest district office of the Office of Price Administration.

Sec. 11. **Credit, delivery, packing and other charges. (a)** Any additional charge for credit, packing, delivery, or anything else which is not quoted and billed separately is considered part of the selling price. You may charge for those services only to the extent allowed by this section.

(b) If you were engaged in the business of selling goods during March 1942, and during that month made a separate charge for the extension of credit, or for delivery or packing, you may make a charge for any of those services on the sale of goods covered by this regulation no greater than the charge you made during March 1942, and you must quote and bill those extra charges separately.

(c) If you were not engaged in business during March 1942, or if you did not extend credit or delivery or packing service during that month, you may make a charge for any of those services rendered the buyer, no greater than the charge made by your closest competitor selling used goods, who makes a separate charge for that service. You must quote and bill those extra charges separately.

(d) You cannot require the customer to take any of these services.

400 Ice Cream Plants Use Cabinet Inventory System of Kelvinator

DETROIT—Edward R. Legg, sales manager for Kelvinator, reports that nearly 400 ice cream manufacturers are now utilizing the inventory control and service record system which Kelvinator offered to the industry last fall, and that to date more than 100,000 each of inventory cards, file folders, and record tags have been purchased by individual ice cream plants in order to improve their cabinet maintenance systems.

Kelvinator originated and offered its inventory control program to the industry after a survey by the company had revealed the signal absence of uniform methods for accurately controlling inventory and maintenance records of ice cream cabinets.

Utilizing the results of this survey, Kelvinator developed its inventory control program, based on five simplified forms, which include:

1. **Cabinet Inventory Record**—to maintain record of location of every cabinet owned.

2. **Service or Inspection Report**—to keep track of service calls and maintenance costs.

3. **Order for Installation or Removal**—to maintain "traffic's records on cabinets.

4. **Information Folder**—to maintain a "file folder" for all information on each retail stop.

5. **Identification Tag**—to attach permanently to each unit.

The entire program was incorporated into a brochure which has since been distributed throughout the industry on a personal presentation basis by field representatives of Kelvinator. In explaining the unusual response to Kelvinator's offer either to make the program available for adaptation for individual manufacturers free of charge, or to sell them the necessary supplies of control cards, etc, at cost, Mr. Legg quoted a Texas dealer, who summarized his reaction as follows:

"We've heard a lot of talk out here in the field about how we should conserve our equipment and make it last for the duration, but Kelvinator's inventory control system is one of the first attempts I've seen to do something about it."

RUBBER SHATTERS LIKE GLASS

OIL CONGEALS, GASOLINE FREEZES

TO G-E DISTRIBUTORS AND CONTRACTORS

Here is another exciting advertisement in the G-E series that is carrying the story of wartime uses of refrigeration and air conditioning to the readers of Time, Newsweek, Business Week and 18 industrial papers. Reaching thousands of executives in key industries, these ads are creating new prospects and new customers for G-E refrigeration equipment in war industry and for postwar uses.

100 DEGREES BELOW ZERO!

Going down! Zero . . . 10 below . . . 50 below . . . 100 below . . . and still going! Not in a scientist's laboratory, but in everyday life . . . in industry.

Far-below-zero temperatures have been put to work. Machine parts are shrink-fitted together by the application of extreme cold to one of the parts. Methods of marketing food are being changed by new high-speed freezing processes.

Refrigerated test chambers are teaching men and airplanes how to fly in those strange and frigid atmospheres . . . the troposphere and the true stratosphere.

Today sub-zero temperatures . . . produced by General Electric Industrial Refrigeration and Air Conditioning equipment, are working in hundreds of ways to help speed up America's war effort . . . to help machines work more efficiently.

Tomorrow, when war clouds lift, these new techniques will bring benefits to all in flexible, efficient air conditioning and commercial refrigeration equipment . . . from General Electric.

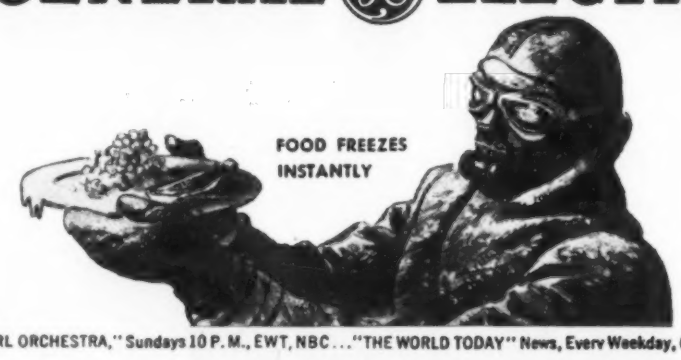
General Electric Co., Air Conditioning and Commercial Refrigeration Divisions, Section 442, Bloomfield, New Jersey.

☆ BUY WAR BONDS ☆

METALS SHRINK WATCHES STOP

Industrial Refrigeration by

GENERAL ELECTRIC



FOOD FREEZES INSTANTLY

Hear the General Electric Radio Programs: The "G-E ALL-GIRL ORCHESTRA," Sundays 10 P. M., EWT, NBC . . . "THE WORLD TODAY" News, Every Weekday, 6:45 P. M., EWT, CBS

Are you setting . . .

. . . your sights for Postwar Business?

TO THOSE MANUFACTURERS who are preparing now for the peace to come by "setting their sights" for postwar markets, the Tecumseh Products Company offer the services of their engineering department.

Tecumseh's engineering department is staffed with seasoned refrigeration engineers who are now working on developments that may be helpful to your peacetime planning. For example, manufacturers of refrigerators are anticipating a greater demand for both domestic and commercial refrigerators after the war. To meet this market CHIEFTAIN has designed units that fulfill the requirements of the smallest enclosures for apartment use up to room size storage units for farms, restaurants, hotels and large institutions.

If you are "setting your sights" for postwar markets, we invite you to write our sales department today for complete information on how CHIEFTAIN engineers can assist you in designing your new refrigerating units.

★ *When the peace is signed the leader will still be CHIEFTAIN* ★

Chieftain TECUMSEH PRODUCTS CO. TECUMSEH • MICHIGAN

Army Refrigeration Problems

By P. B. Reed

Manager, Refrigeration and Air Conditioning Division, Perfex Corp.

Maintaining Proper Piston Head Clearance

One of the factors directly affecting the efficiency of a compressor is what is sometimes referred to as "clearance volume" which is the amount of space in the cylinder that is not displaced by the piston.

It is not practical to build a compressor in which the piston, on the compression stroke, comes fully up to the valve plate. There must be a little clearance which in common manufacturing practice is about .003 inch to .015 inch depending on the design of the compressor, the application on which the compressor is to be used and the ability of the manufacturer to hold precision limits.

Also there are some other spaces from which the gas is not cleared, such as passages through the valve plate to the discharge valve leaf or disc, and space around the suction valve.

EFFECT OF RE-EXPANSION

These spaces — between the piston head and the valve plate, around piston valves and in passages — represent re-expansion space, for when the piston is at the end of its compression stroke a certain amount of highly compressed gas is trapped in these re-expansion spaces and is not forced over past the discharge valve into the condenser, so that, as the piston starts back down on its suction stroke this high pressure gas re-expands and fills the cylinder, its pressure decreasing as the piston goes down.

Until this pressure falls below suction pressure, the trapped gas prevents the cylinder from getting a full charge of gas from the suction line. This affects the capacity of the compressor as it has an effect similar to reducing the stroke of the piston. It also affects the ability of the compressor to pump a good vacuum.

AN EXAMPLE OF THE EFFECT OF RE-EXPANSION

Let us take a specific example, a single cylinder compressor 1.5 inch bore by 1.25 inch stroke. The volume of the cylinder is the square of its diameter 1.5 inch, divided by 4 times pi, times the stroke 1.25 inch,

$$\left(\frac{1.5 \times \pi \times 1.25}{4}\right)$$ or 2.21 cubic inches.

Its theoretical displacement per revolution would therefore be 2.21 cubic inches.

The manufacturer allows himself a piston head clearance tolerance of .005 inches to .015 inches and this compressor has a piston head clearance of .0125 inches. The volume of gas in this clearance space is therefore

$$\left(\frac{1.5 \times \pi \times .0125}{4}\right) = .0221 \text{ cu. in. or}$$

about 1/45 of a cubic inch, which doesn't sound so bad for it represents only 1% of the total volume of the cylinder.

There is also some lost space in the discharge passage through the valve plate, which is not readily calculable so, for present purposes we will disregard it, although it certainly cannot be disregarded in compressor design.

Although the clearance volume in this compressor be assumed as 1% of the total displacement the loss in efficiency due to it is much greater than 1%. This compressor is operating with methyl chloride with a suction pressure of about 5 p.s.i. gauge or 20 p.s.i. absolute. The condensing pressure is about 105 p.s.i. gauge or 120 p.s.i. absolute. (Compression ratio of 6 to 1).

CLEARANCE SPACE FILLED WITH GAS AT 120 P.S.I. ABSOLUTE

The gas in the cylinder will have to be compressed a little more than condensing pressure before it can be pushed over past the discharge valve into the condenser, but for simplicity we will disregard this and consider the pressure of the gas at the end of the compression stroke and just before it starts downward on the suction stroke as 120 p.s.i. absolute.

So the gas that is left in the clearance space above the piston and in the passage in the plate is at a pressure of 120 p.s.i. absolute. As the piston goes downward on the suction stroke this 120 p.s.i. gas expands—for the first .0125 inch the piston goes downward the gas expands to double its volume and one-half its pressure, or 60 p.s.i. The next .0125 inch triples the volume, but cuts the pressure to one-third or 40 p.s.i. until, when the piston has gone down six times the piston head clearance or .075 inch, the original 120 p.s.i. trapped gas has become 20 p.s.i.

SUCTION GAS CAN'T ENTER THE CYLINDER

During all this time there has been no suction gas coming into the cylinder for the suction pressure is only 20 p.s.i. absolute and it cannot open the suction valve and flow into the cylinder until the pressure in the cylinder gets below its pressure, 20 p.s.i. absolute. Thus the first 6% of the stroke is a total loss and even after the pressure in the cylinder does go below 20 p.s.i. it does not suddenly become zero pressure, so the cylinder does not get a full charge even then.

WHEN EFFECT IS WORST

This condition is worse at the lower suction pressures (higher compression ratios—lower evaporator temperatures) but is of less importance at higher suction pressures (lower compression ratios — higher evaporator temperatures) such as in air conditioning. Nevertheless, it should not be disregarded on any application for it represents loss of capacity, lowered efficiency and less refrigeration for the size of the equipment and for the cost of the electric current.

Clearance volume is very important in the higher compression ratios, that is, extremely low temperature units. For example: the above compressor would cease pumping entirely at about 27½ inch vacuum (1.2 p.s.i. absolute) to that it would not pump lower than a 27½ inch vacuum (still against a 120 p.s.i. absolute, head pressure which would be about a hundred-to-one compression ratio). If it were a matter of pumping a vacuum on this compressor simply out into the atmosphere (at atmospheric pressure of 14.7 p.s.i. absolute) a vacuum of about 29.5 inches could be pumped (disregarding other losses).

EFFECT OF WEAR

Compressor manufacturers watch these piston clearances and give their compressors tests for volumetric efficiency before they ship them, so the service engineer is usually safe in assuming that the piston head clearance is okay in a new compressor, but it is something that he definitely should take into consideration in rebuilding or repairing an old compressor especially one in which the bearings, pins, bushings or eccentrics are worn considerably—enough that the piston or pistons are dropped down a bit thus increasing the piston head clearance.

Wear of these parts not only results in noisy operation but also in inefficient operation. As a matter of fact the efficiency of compressors, especially on low temperature jobs, is frequently more severly impaired by increase of piston head clearance than by wear of pistons and/or rings.

In ordinary field service, notice the thickness of the valve plate gasket and do not replace it with a thicker one which will increase the head clearance.

In overhauling a compressor watch that the new bearings are so centered as to bring the pistons up to restore original piston head clearance.

Unsurpassed Sensitivity and Dependability

FEATURES

Readily removed orifice cartridges eliminates necessity for stocking several sizes for low tonnage installations.

Carefully lapped hard faced ball insures positive tight shut-off.

Thoroughly field tested.

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..on your air conditioning problems

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Auxiliary equipment such as oil separators, heat exchangers, temperature control valves, etc., play an important part in the operation of air conditioning installations but very often no consideration is given to these important items in the design and construction of the basic equipment.

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Servicing the G-E Refrigerator Line

Machine Will Not Run (cont.)

Cause II: Electrical parts of machine are inoperative.

CORRECTION: DR MACHINES

1. Remove control cover and examine metallic bellows. When warm, bellows should exert considerable pressure. Push against bellows arm. If bellows can be compressed easily with fingers, it is weak and should be replaced.

2. Test starting resistor of control by eliminating it from machine circuit. (See Fig. 22).

a. Resistors are in controls of following machines:

D-2	DR-1
D-15	DR-2
DA-1	DRA-2

b. Place a screw driver or a jumper wire across terminals of resistor. Resistor is now shorted out. If machine starts, resistor is inoperative and should be replaced.

3. Inspect bridle spring of upright C, and flat D and E controls.

a. Install steel replacement if spring does not close main contacts with snap action.

b. Install steel replacement latch spring underneath latch of main switch whenever steel bridle spring is installed, so that overload device is properly adjusted.

c. Examine gap between main contacts after spring replacements. If not ⅛ inch on C control or 1/16 inch on D and E controls, loosen locknut and turn temperature range adjustment screw.

4. Lift starting relay armature, No. 7, and observe if spring action closes starting contacts of upright A and C, and flat D controls.

a. Replace starting arm spring, No. 24, if it is weak.

b. Dust powder on rubber sleeve of starting relay contact arm, No. 5, if it is sticking.

c. Wrap sleeve with rubber tape or replace it if it is worn.

d. If starting relay contact arm of early A controls has no shunt wire, replace arm with one having shunt and attach end of shunt to stationary bracket.

5. Clean starting relay armature, No. 9, and pole face of starting relay shunt coil, No. 8, in flat E controls. The armature may be sticking or some foreign matter may be present. Use a rubber eraser. Do not use a file.

6. Examine flexible lead connected to movable main contact of control. If it is broken, replace it with similar stranded wire.

7. Test capacitor by eliminating it from machine circuit. (See Fig. 23).

a. Capacitors are on following machines:

D-30	DR-3	DRB-3
D-31	DR-35	DRB-31
D-35		DRE-3
D-40		DRE-4
		DRA-4

b. Place a piece of heavy paper between upper and lower sets of contacts on starting relay contact arm.

c. Connect a jumper wire from starting arm to an overload heater terminal. Capacitor is now shorted out. If machine runs, difficulty is in capacitor which should be replaced.

8. Test machine direct after checking for a ground. (See Fig. 24).

Fig. 22—How to Eliminate Resistor

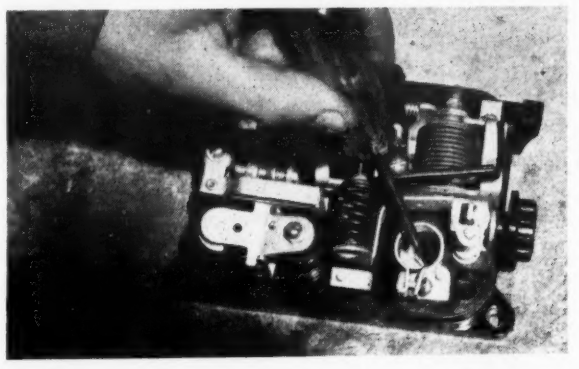

Fig. 22—Eliminating resistor from circuit.

Eliminating Capacitor

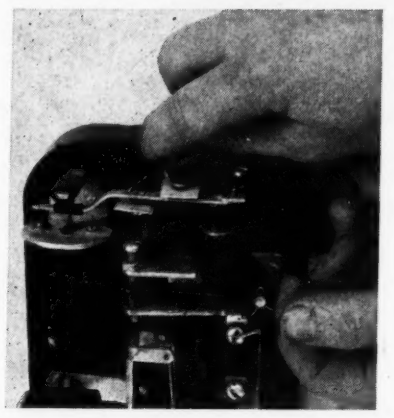

Fig. 23—Eliminating capacitor from circuit.

a. Refer to wiring diagram for machine involved.

b. Take off back panel of A and C controls by removing screws.

c. Remove cover and mounting screws from D and E controls. Mounting screws are No. 25 and 26 of D controls and those in corners of E controls.

d. Disconnect three motor leads from control base.

e. Connect running winding lead to one side of connecting cord and common lead to other side.

f. Touch starting winding lead momentarily to side of line connected to running winding. If machine starts, starting winding lead should immediately be pulled away from line. Control is now shorted out.

g. If machine runs with control shorted out, difficulty is in control or capacitor. Test control circuit again, according to steps 1 to 7 inclusive.

h. If machine will not run with control shorted out, motor is inoperative or compressor is stuck.

Editor's Note: This is the fourth of a series of articles describing the servicing of General Electric Co.'s refrigerators, which is being published in Air Conditioning & Refrigeration News.

CORRECTION: OPEN-TYPE MACHINES

1. Test control by eliminating it from machine circuit.

a. Remove control from machine.

b. Insert bare ends of a looped jumper wire into locking connector plug from which control was disconnected. Control is now shorted out. If machine runs, difficulty is in control.

c. Remove control cover and examine bellows. When warm, bellows should exert considerable pressure. Push against bellows arm. If bellows can be compressed easily with fingers, it should be replaced.

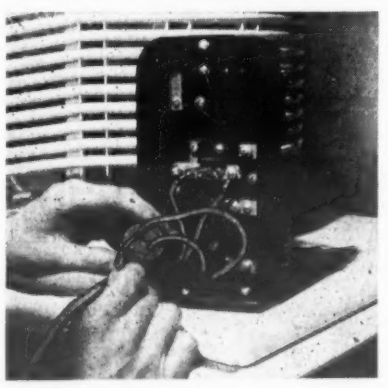

Fig. 24—Testing machine direct.

d. Replace complete control when bellows is not found to be cause.

2. Test capacitor and motor.

a. Remove belt from motor pulley.

b. Determine if motor will run without load. If not, replace it.

Cause III: Open-type machines. Belt too tight.

CORRECTION

1. Adjust belt if too tight.

a. Approximately 10 pounds' pressure exerted midway between compressor and motor pulleys should depress belt about one-half inch.

b. Mount compressor and motor closer together.

c. Line up both pulleys.

Cause IV: CA and Open-type Machines. Non-condensable gas increases pressure and stalls machine.

CORRECTION

Bleed non-condensable gas.

Cause V: Compressor is stuck.

CORRECTION

1. Jar machine.

2. Apply 220 volts "momentarily" to Sealed machines. Apply direct from 220-volt line if available or use transformer on 110-volt line. Unscrew cabinet light and apply through connecting cord.

3. If Sealed machine, and Steps 1 and 2 are unsuccessful, replace entire machine.

4. If Open-type machine, and jarring or manual turning is unsuccessful, replace compressor.

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1. Specifications of Grunow oil are the same as the original oil in the refrigerator.
2. Grunow oil is refined so carefully that repeated tests show less than 3/100% maximum sludge.
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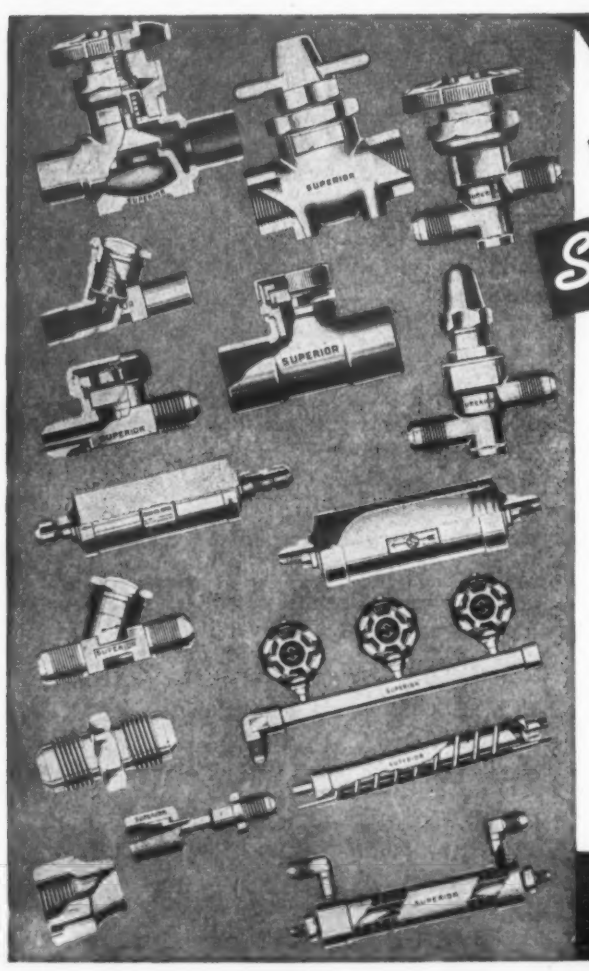

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Even though we are working "round the clock" on implements of war, every passing month strengthens our conviction that refrigeration equipment is so vitally essential that we should continue to allocate an increasing percentage of our manufacturing facilities, personnel and planning to our refrigeration products.

THAT'S OUR POLICY . . . continuing to do even a better job of supplying, as promptly as conditions will permit, more valves, manifolds, heat exchangers, dehydrators, liquid indicators, fittings and accessories to manufacturers, jobbers, installers and service engineers.

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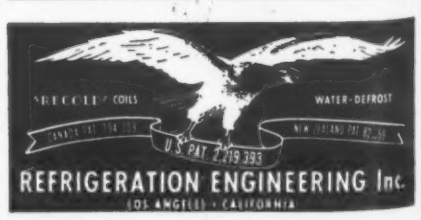

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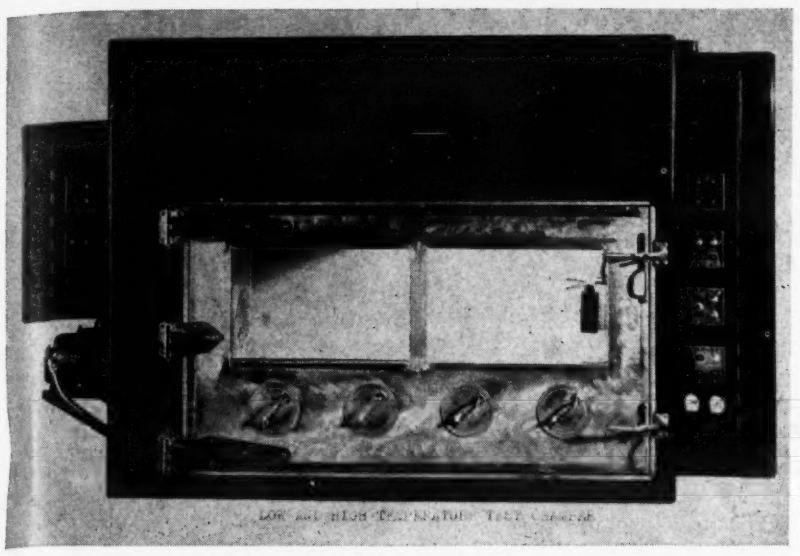
New Test Chamber Provides Access To Interior Without Opening the Main Door



New high and low temperature test chamber made by American Coils Co. Plugs in the lower panel of the door permit ready access to the interior of the testing chamber.

* * *

NEWARK, N. J.—Improved type of its model RTC-1 automatic test chamber, claimed to provide controlled temperatures between minus 70° C. and 158.8° C., has been announced by American Coils, Inc. here.

New machine may now be obtained on special order, equipped with four individually operated plugs in the lower panel of the door to permit ready access to the interior of the testing chamber, it is said. The plugs allow an operator to insert his hand through an insulated passage and move or adjust the part under test without opening the whole door and thus endangering the accuracy of the test on other parts in the chamber, claims the company.

Ordnance Plant System Holds To Within 1°

EVANSVILLE, Ind.—Variations of only 1° F. in dry bulb temperature and 1% plus or minus in relative humidity are maintained in the twin primer storage and loading buildings of the Evansville Ordnance plant here by two 100-ton air conditioning systems.

Employing 100% outside air, the two systems are each powered by a 75-hp. and 25-hp. Airtemp radial compressor equipped with 100-ton Marlo evaporative condensers which save about 90% of the water normally used.

Entering air passes through a washer which saturates, cleans, and pre-cools the air before it flows through a bank of direct expansion "Freon" coils and steam coils. The cooling coils are built into a bank of four, three of which are supplied by the 75-hp. machine and one by the 25-hp. unit.

The close temperature and humidity controls take advantage of the automatic capacity reduction feature in these compressors.

Liquid Carbonic V.P.

W. D. JORDAN

* * *

CHICAGO—W. D. Jordan has been elected vice president of The Liquid Carbonic Corp. Mr. Jordan joined Liquid in 1938 as manager of the specialty products division, to develop and market a line of ice cream cabinets, frosted food cabinets and related products.

Early in 1941 he became an active member of the Priorities Committee of Dairy Industries Supply Association, and spent most of that year in Washington on priorities.

In 1942 he was appointed manager of Liquid's War Products division to handle the company's war contracts, and subsequently was also named director of soda fountain and cabinet research and planning committee.

Repair Form Changed For Resistance Wire

WASHINGTON, D. C.—Application forms used by manufacturers for permission to ship commercial cooking appliances and resistance wire for repairs or replacements have been changed through a minor revision to Limitation Order L-65, announced the War Production Board recently.

To transfer possession or title of any new electrical appliance affected by the order a manufacturer is now required to file application on Form WPB-1319 instead of PD-556. Report form to be used is now WPB-1600 instead of PD-655; and the new appeals form is WPB-1477, replacing PD-500.

Armbright Takes Post With American Central

CONNERSVILLE, Ind. — Appointment of Harry A. Armbright as eastern sales manager for the American Central Mfg. Corp., is announced by N. C. Ferreri, vice president in charge of sales.

Armbright, whose headquarters will be in New York, will direct sales in the 13 eastern states.

Armbright comes to American Central from the modern kitchen division of Pierce Phelps, Inc. of Philadelphia, where he was in charge of kitchen modernization and merchandising. A native of Richmond, Va., he has been associated for the past 21 years with manufacturers of electrical appliances.

R. B. Davis Again With Melchior, Armstrong

PHILADELPHIA — R. B. Davis, formerly manager of the Southern Division of Melchior, Armstrong, Dessau Co., and since 1942 with the Army Ordnance Department, has rejoined the company and will make his headquarters at the Philadelphia branch office, 1516 Callowhill St.

PURO ELECTRIC WATER COOLERS

Different models available for the various requirements of government agencies and war production plants.

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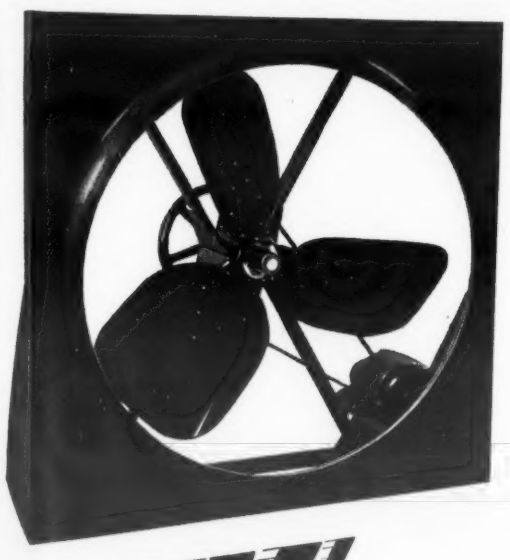

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Fan Size	C.F.M.	H.P.
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36"	9,000	1/4
36"	10,150	1/3
42"	11,300	1/4
42"	12,600	1/3
48"	15,050	1/2
48"	18,000	3/4

LAU propeller type air circulating fans have many applications for maintaining constant temperatures—providing fresh air in confined enclosures—removing stale, excessively hot, or dust-laden air; fumes; smoke; etc. Available on priority ratings for reasonably prompt delivery. Plan your requirements ahead. Now is the time to schedule summer installations.

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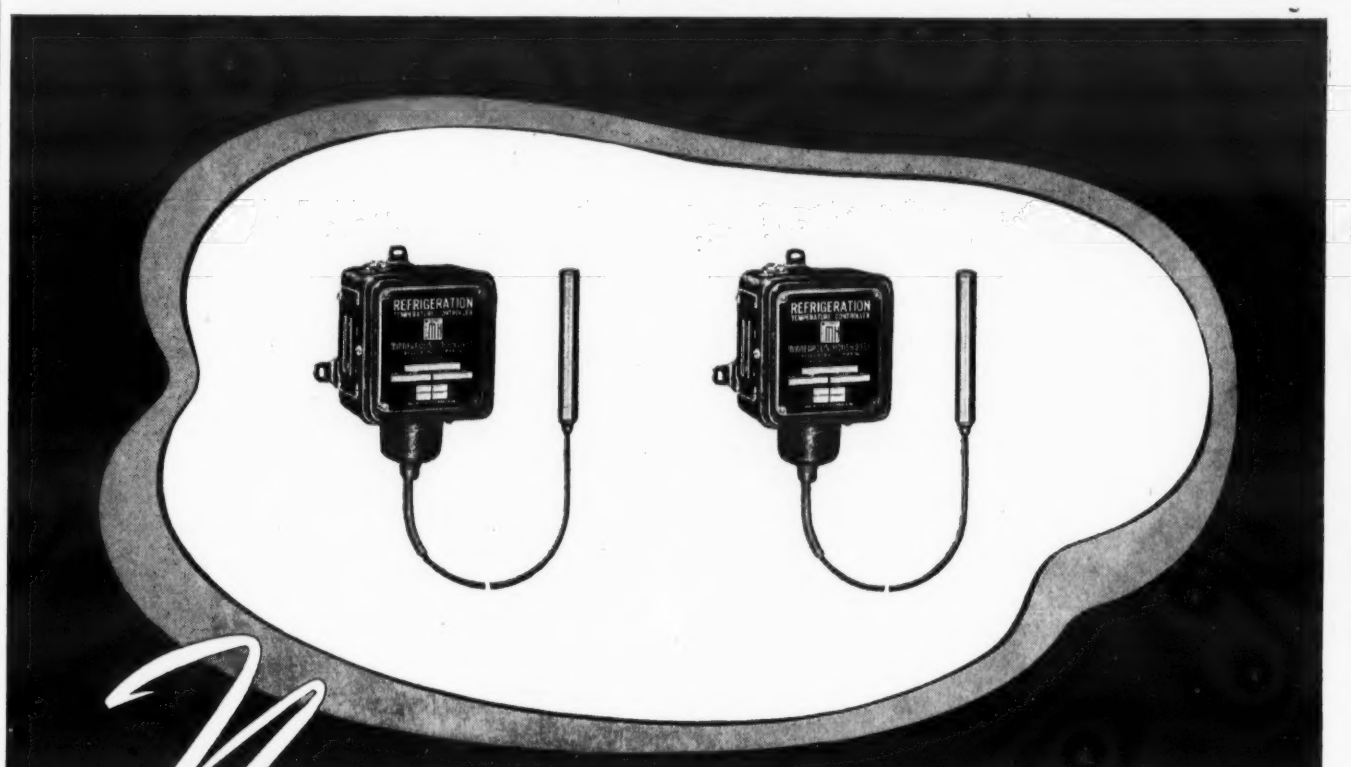

New WIDE RANGE TEMPERATURE CONTROLLERS FROM −100°F TO +210°F FOR LABORATORY TEST CABINETS

STANDARD FEATURES of the New L626B Refrigeration Temperature Controller Include:

RANGES: −100° to +50°F. (−70° to +10°C.) and +40° to +210°F. (+5° to +100°C.)

Con-Tac-Tor Mercury Switch provides control for heating or cooling . . . Narrow fixed differential . . . Simple and rugged construction ... Scales calibrated both °F. and °C.

AIRPLANE instruments and countless other items require constant checking in test cabinets at ranges as low as −100°F. and as high as 210°F. to determine performance at the actual temperatures under which they will operate. The new L626B Refrigeration Temperature Controller is available in two ranges, −100°F. to +50°F. and +40°F. to +210°F. Thus these two controls cover the entire test range of −100°F. to +210°F. Their double-throw mercury switches permit control of either heating or cooling equipment . . . Write for complete details . . . There is a Minneapolis-Honeywell Controller for every refrigeration need, in any desired range. Minneapolis-Honeywell Regulator Company, 2807 Fourth Ave. So., Minneapolis 8, Minn.

THE POLARTRON SYSTEM OF FROST-FREE REFRIGERATION

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REFRIGERATION CONTROL SYSTEMS

Task Committee Report on Refrigeration Requirements In Places Handling Food

Data Given on Total Establishments, Extent of System Generally Installed

In the fall of 1943 a Task Committee of the General Refrigeration Industry Advisory Committee submitted a report at the request of the Director of the General Industrial Equipment Division of WPB on the quantity of refrigeration equipment, namely: compressors, evaporators and accessories, not including fixtures, which will be required in the calendar year 1944 to take care of the minimum requirements for domestic civilian food processing, preservation, and storage.

Scope of the report covered the use of refrigerating machinery and equipment performing functions of cooling and freezing foodstuffs during processing, conditioning spaces in which food manufacturing processes are carried out, preserving foodstuffs in storage, preserving foodstuffs in transit, and ice manufacture and storage.

The Task Committee worked with all available statistics plus industry experience to show (1) the number of establishments utilizing refrigerating machinery and equipment in processing, storing, transporting, distributing, and dispensing perishable foodstuffs; (2) the type and extent of refrigerating equipment in such establishments; and the overall value of equipment installed in such establishments.

Further, the Committee provided estimates on the life and normal replacement rate of refrigerating equipment in each of the various types of establishments.

Because this information probably is the most comprehensive picture ever drawn of the broad use of refrigeration as a food preserving method AIR CONDITIONING & REFRIGERATION NEWS is publishing parts of the Task Committee report.

Retail Food Stores

RETAIL FOOD STORES

Statistics furnished the committee by the War Production Board, which figures are based on the 1939 Census of Manufactures, reveal the number of establishments under this classification, subdivided by types of business and product handled and including average annual sales volume.

No statistics are available to indicate what percentage of the total utilize refrigeration equipment nor the size or quantity of refrigeration equipment so utilized.

The committee studied each subclassification and estimated from their experience the percentage of the total having refrigeration equipment and the type of refrigeration equipment installed in the typical average establishment. The exact treatment given each subclassification is as indicated hereinafter.

Establishments under this classification were treated in several different subclassifications, as follows:

(a) Groceries (no fresh meats).
  (1) Over $20,000 annual sales.
  (2) Under $20,000 annual sales.
(b) Combination stores (groceries and meats).
  (1) Over $150,000 annual sales.
  (2) $50,000 to $150,000 annual sales.
  (3) $20,000 to $50,000 annual sales.
  (4) Under $20,000 annual sales.
(c) Dairy stores.
(d) Milk dealers, route and store.
(e) Meat markets.
(f) Sea food markets.
(g) Confectioneries.
(h) Delicatessens.
(i) Fruit and vegetables.
(j) Bakeries and caterers.
(k) General merchandise (with food).
(l) General stores (with food).

Each of the above subclassifications was treated separately in accordance with the following:

Groceries Only

(a) GROCERIES (NO FRESH MEATS)

Establishments under this classification were treated under two different subclassifications, as follows:

(1) OVER $20,000 ANNUAL SALES

Statistics reveal 31,664 establishments in this classification having average annual sales of over $20,000. The committee estimated the average size and type of refrigeration equipment installed in such establishments and the percentage of the total having such refrigeration, in accordance with the following:

75%—two 10 foot display cases with one ¾-hp. condensing unit.

75%—one 30 cu. ft. cabinet with one ¼-hp. condensing unit.

Based on present-day prevailing prices, the average manufacturer's price for such equipment is $9,160,000 for the total 31,664 establishments.

The average life of such equipment is estimated at 10 years and the normal replacement rate at 10% per annum.

(2) UNDER $20,000 ANNUAL SALES

Statistics reveal 168,639 establishments in this classification having average annual sales of under $20,000. The committee estimated the average size and type of refrigeration equipment installed in such establishments and the percentage of the total having such refrigeration, in accordance with the following:

70%—one 8 ft. display case with one ¼-hp. condensing unit.

Based on present-day prevailing prices, the average manufacturer's price for such equipment is $19,300,000 for the total of 168,639 establishments.

The average life of such equipment is estimated at 10 years and the normal replacement rate at 10% per annum.

Combination Stores

(b) COMBINATION STORES (GROCERIES AND MEAT)

Establishments under this classification were treated under several different subclassifications, as follows:

(1) OVER $150,000 ANNUAL SALES

Statistics reveal 3,251 establishments in this classification having average annual sales of over $150,000. The committee estimated the average size and type of refrigeration equipment installed in such establishments and the percentage of the total having such refrigeration, in accordance with the following:

100%—six 10 ft. display cases with two 1-hp. condensing units.

100%—one dairy refrigerator with one ⅓-hp. condensing unit.

50%—one frozen food cabinet with one ⅓-hp. condensing unit.

100%—one reach-in cabinet with one ⅓-hp. condensing unit.

100%—one walk-in cooler with one 2-hp. condensing unit.

25%—one vegetable case with one ⅓-hp. condensing unit.

Based on present-day prevailing prices, the average manufacturer's price for such equipment is $5,305,000 for the total 3,251 establishments.

The average life of such equipment is estimated at 10 years and the normal replacement rate at 10% per annum.

(2) $50,000 TO $150,000 ANNUAL SALES

Statistics reveal 7,609 establishments in this classification having average annual sales of from $50,000 to $150,000. The committee estimated the average size and type of refrigeration equipment installed in such establishments and the percentage of the total having such refrigeration, in accordance with the following:

80%—three 10 ft. display cases with one 1½-hp. condensing unit. One dairy refrigerator.

100%—one reach-in cabinet with one ⅓-hp. condensing unit.

100%—one walk-in cooler with one 1-hp. condensing unit.

50%—one frozen food cabinet with one ⅓-hp. condensing unit.

5%—one vegetable case with one ⅓-hp. condensing unit.

Based on present-day prevailing prices, the average manufacturer's price for such equipment is $6,991,900 for the total of 7,609 establishments.

The average life of such equipment

(Continued on Page 19, Column 1)

For a difficult and arduous job superbly done, the Task Committee of the General Refrigeration Industry Advisory Committee which drew up the report determining the refrigeration equipment requirements for the food industry is deserving of the praise of the industry. The men who served on the task committee were:

M. G. Munce, York Corp.

F. H. Faust, General Electric Co.

T. S. Pendergast, Universal Cooler Corp.

Other members of the General Refrigeration Industry Advisory Committee include Frank Smith, Tecumseh Products Co.; A. B. Schellenberg, Alco Valve Co., Wayne Jordan, Liquid Carbonic Corp.; C. V. Hill, Jr., C. V. Hill Co.; Charles Knox, Baker Ice Machine Co.; H. F. Hildreth, Westinghouse Electric & Mfg. Co.; W. H. Aubrey, Frick Co., Inc.; D. F. French, Carrier Corp.; Frank Kirk, The Vilter Mfg. Co.; H. J. Jarvis, Refrigeration Engineering, Inc.; H. F. Lehman, Frigidaire; and C. E. Scott, Fedders Mfg. Co.

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Gauges and Dial Thermometers that get off their course—that don't reveal true operating conditions—just don't fit in today's picture. Yet not even Marsh has ever been able to build a gauge that can't be knocked out of adjustment.
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When men in the trade get together and someone sets up a moan about how tough it is to get parts, tools, and equipment, it's almost certain that somebody will direct him to AIRO. Why? Because AIRO has established a reputation for "having it." . . . If you have a particular "moan" right now, send for the newest AIRO catalog. Chances are, we can fix you up, too.

AIRO SUPPLY CO., Dept. B

2732 N. Ashland Ave., Chicago 14, Ill.
WHOLESALE DISTRIBUTORS
Refrigeration Parts and Equipment

Refrigeration Requirements Presented For All Types of Food Stores

(Continued from Page 18, Column 5)

is estimated at 10 years and the normal replacement rate at 10% per annum.

(3) $20,000 TO $50,000 ANNUAL SALES

Statistics reveal 57,757 establishments in this classification having average annual sales of from $20,000 to $50,000. The committee estimated the average size and type of refrigeration equipment installed in such establishments and the percentage of the total having such refrigeration, in accordance with the following:

100%—one display case with one ½-hp. condensing unit.

25%—one walk-in cooler with one ½-hp. condensing unit.

25%—one reach-in refrigerator with one ⅓-hp. condensing unit.

25%—one frozen food cabinet with one ¼-hp. condensing unit.

Based on present-day prevailing prices, the average manufacturer's price for such equipment is $15,459,000 for the total 57,757 establishments.

The average life of such equipment is estimated at 10 years and the normal replacement rate at 10% per annum.

(4) UNDER $20,000 ANNUAL SALES

Statistics reveal 118,417 establishments in this classification having average annual sales under $20,000. The committee estimated the average size and type of refrigeration equipment installed in such establishments and the percentage of the total having such refrigeration, in accordance with the following:

37½%—one display case with one ¼-hp. condensing unit.

37½%—one reach-in refrigerator with one ¼-hp. condensing unit.

Based on present-day prevailing prices, the average manufacturer's price for such equipment is $12,000,000 for the total 118,417 establishments.

The average life of such equipment is estimated at 10 years and the normal replacement rate at 10% per annum.

Dairy Stores

(c) DAIRY STORES

Statistics reveal 7,382 establishments under this subclassification. The committee estimated the average size and type of refrigeration equipment installed in such establishments and the percentage of the total having such refrigeration, in accordance with the following:

50%—one display case with one ¼-hp. condensing unit.

100%—two ice cream cabinets with two ⅓-hp. condensing units.

90%—one reach-in cabinet with one ¼-hp. condensing unit.

25%—one soda fountain with one ½-hp. condensing unit.

Based on present-day prevailing prices, the average manufacturer's price for such equipment is $4,005,000 for the total 7,382 establishments.

The average life of such equipment is estimated at 10 years and the normal replacement rate at 10% per annum.

(d) MILK DEALERS, ROUTE AND STORE

Statistics reveal 9,452 establishments under this subclassification. The committee estimated the average size and type of refrigeration equipment installed in such establishments and the percentage of the total having such refrigeration, in accordance with the following:

90%—one cold storage with one 2-hp. condensing unit.

Based on present-day prevailing prices, the average manufacturer's price for such equipment is $4,845,000 for the total 9,452 establishments.

The average life of such equipment is estimated at 10 years and the normal replacement rate at 10% per annum.

Meat Markets

(e) MEAT MARKETS

Statistics reveal 35,630 establishments under this subclassification. The committee estimated the average size and type of refrigeration equipment installed in such establishments and the percentage of the total having such refrigeration, in accordance with the following:

85%—one walk-in cooler and one display case, with one 1½-hp. condensing unit.

Based on present-day prevailing prices, the average manufacturer's price for such equipment is $13,640,000 for the total 35,630 establishments.

The average life of such equipment is estimated at 10 years and the normal replacement rate at 10% per annum.

(f) SEA FOOD MARKETS

Statistics reveal 6,730 establishments under this subclassification. The committee estimated the average size and type of refrigeration equipment installed in such establishments and the percentage of the total having such refrigeration, in accordance with the following:

50%—one display case with one ⅓-hp. condensing unit.

Based on present-day prevailing prices, the average manufacturer's price for such equipment is $527,000 for the total 6,730 establishments.

The average life of such equipment is estimated at 10 years and the normal replacement rate at 10% per annum.

Confectioneries

(g) CONFECTIONERIES

Statistics reveal 43,390 establishments under this subclassification. The committee estimated the average size and type of refrigeration equipment installed in such establishments and the percentage of the total having such refrigeration, in accordance with the following:

75%—one soda fountain with one ¾-hp. condensing unit.

50%—one reach-in cabinet with one ¼-hp. condensing unit.

Based on present-day prevailing prices, the average manufacturer's price for such equipment is $10,945,000 for the total 43,390 establishments.

The average life of such equipment is estimated at 10 years and the normal replacement rate at 10% per annum.

Delicatessens

(h) DELICATESSENS

Statistics reveal 9,909 establishments in this subclassification. The committee estimated the average size and type of refrigeration equipment installed in such establishments and the percentage of the total having such refrigeration, in accordance with the following:

80%—one display case with one ⅓-hp. condensing unit.

50%—one reach-in refrigerator with one ⅓-hp. condensing unit.

50%—one frozen food cabinet with one ⅓-hp. condensing unit.

Based on present-day prevailing prices, the average manufacturer's price for such equipment is $2,759,000 for the total 9,909 establishments.

The average life of such equipment is estimated at 10 years and the normal replacement rate at 10% per annum.

(i) FRUIT AND VEGETABLES

Statistics reveal 27,660 establishments under this subclassification. The committee estimated the average size and type of refrigeration equipment installed in such establishments and the percentage of the total having such refrigeration, in accordance with the following:

75%—one reach-in cabinet with one ⅓-hp. condensing unit.

Based on present-day prevailing prices, the average manufacturer's price for such equipment is $3,250,000 for the total 27,660 establishments.

The average life of such equipment is estimated at 10 years and the normal replacement rate at 10% per annum.

Bakeries

(j) BAKERIES AND CATERERS

Statistics reveal 16,985 establishments under this subclassification. The committee estimated the average size and type of refrigeration equipment installed in such establishments and the percentage of the total having such refrigeration, in accordance with the following:

75%—one display case with one ¼-hp. condensing unit.

50%—one dough retarder with one ¼-hp. condensing unit.

Based on present-day prevailing prices, the average manufacturer's price for such equipment is $3,372,000 for the total 16,985 establishments.

The average life of such equipment is estimated at 10 years and the normal replacement rate at 10% per annum.

(Concluded on Page 20, Column 1)

ROME-CONDENSER

★ **Jointless Type** ★

Rome Water Cooled Condenser Coils insure trouble-free condensing equipment. Used by leading compressor manufacturers.

ROME-TURNEY RADIATOR COMPANY

222 CANAL ST.
ROME, N. Y.

Precision . . . IN COPPER BENDS

The large U-shaped bend illustrated above is a heat exchanger unit used in Army portable walk-in refrigerators with our armed forces overseas.

MUELLER BRASS CO.
PORT HURON, MICHIGAN

We manufacture copper pipe coils in a multitude of shapes and sizes. Smooth, round bends and exact dimensions are characteristic of Mueller Brass Co. coils. Copper tubing is manufactured in our own mills—exactly the right grade as specified for the particular part.

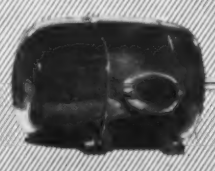
We specialize in tubular assemblies, wrought copper solder type fittings and return bends. Our equipment is the most modern procurable and adapted to low cost, high quality products. All tools for fabricating, forming and processing are made in our own Tool Making Department—the best possible tools for the job are thus obtained with the least possible delay.

Write us if you have requirements for specially fabricated copper tube. Our engineers will be glad to help solve the problem.

We make:
Standard Tubular Fittings
Headers and Manifolds (complete and semi finished)
Single Pipe and Double Pipe Copper Coils
Special Tubular Assemblies
Filters • Driers
Heat Interchangers

VALVES · FITTINGS
ACCESSORIES FOR
REFRIGERATION AND
AIR CONDITIONING

HOWELL MOTORS



ELECTRIC MOTORS FOR INDUSTRY SINCE 1915

HOWELL ELECTRIC MOTORS COMPANY · HOWELL, MICH. · REPRESENTATIVES IN ALL PRINCIPAL CITIES

Who knows the formula for SULFUR DIOXIDE and for METHYL CHLORIDE?
QUIZ 'EM
That's easy . . .
ANSUL*
LIQUID Sulfur Dioxide by ANSUL
5, 10, 25, 70, 100 and 150 lb. Cylinders
LIQUID Methyl Chloride by ANSUL
3, 6, 15, 40, 60, 90 and 130-lb. Cylinders
*REG. U.S. PAT. OFF.
Available in carload lots or handy cylinders sized for servicemen's needs.
ORDERS FILLED PROMPTLY through your Ansul Jobber.
ANSUL CHEMICAL COMPANY
MARINETTE, WISCONSIN
Agents for Kinetic's "FREON-12"
AC-5-44

Report Affords Data on Average Equipment For Various Types of Eating Places

(Concluded from Page 19, Column 5)

(k) GENERAL MERCHANDISE (WITH FOOD)

Statistics reveal 2,737 establishments under this subclassification. The committee estimated the average size and type of refrigeration equipment installed in such establishments and the percentage of the total having such refrigeration, in accordance with the following:

75%—one reach-in cabinet with one ⅓-hp. condensing unit.

Based on present-day prevailing prices, the average manufacturer's price for such equipment is $325,-500 for the total 2,737 establishments.

The average life of such equipment is estimated at 10 years and the normal replacement rate at 10% per annum.

(l) GENERAL STORES (WITH FOOD)

Statistics reveal 39,688 establishments under this subclassification. The committee estimated the average size and type of refrigeration equipment installed in such establishments and the percentage of the total having such refrigeration, in accordance with the following:

75%—one reach-in cabinet with one ⅓-hp. condensing unit.

Based on present-day prevailing prices, the average manufacturer's price for such equipment is $4,650,-000 for the total 39,688 establishments.

The average life of such equipment is estimated at 10 years and the normal replacement rate at 10% per annum.

Eating Places

PUBLIC EATING PLACES

Statistics furnished the Committee by the War Production Board, which figures are based on the 1939 Census of Manufactures, reveal the number of establishments under this classification, subdivided by types of business and product handled and including average annual sales volume. No statistics are available to indicate what percentage of the total utilize refrigeration equipment nor the size or quantity of refrigeration equipment so utilized.

The Committee studied each subclassification and estimated from their experience the percentage of the total having refrigeration equipment and the type of refrigeration equipment installed in the typical average establishment. The exact treatment given each subclassification is as indicated hereinafter.

Establishment under this classification were treated in several different subclassifications, as follows:

(a) Cafeterias, Restaurants,' and Lunch Rooms (Independent).
(1) Under $10,000 Annual Sales.
(2) Over $10,000 Annual Sales.
(b) Cafeterias, Restaurants, and Lunch Rooms (Chain).
(c) Lunch Counters and Stands.
(d) Soft Drink, Juice, and Ice Cream Stands.
(e) Drinking Places (Food Refrigeration Only).
(f) Fountain Drug Stores.

Each of the above subclassifications was treated separately in accordance with the following:

(a) CAFTERIAS, RESTAURANTS, AND LUNCH ROOMS (INDEPENDENT)

Establishments under this classification were treated under two different subclassifications, as follows:

(1) UNDER $10,000 ANNUAL SALES

Statistics reveal 52,000 independent cafeterias, restaurants, and lunch rooms doing an annual business under $10,000.00. The Committee estimated the size and type of refrigeration equipment installed in such establishments and the percentage of the total having such refrigeration, in accordance with the following:

80%—1—reach-in refrigerator with one ⅓-hp. condensing unit.

Based on present-day prevailing prices, the average manufacturer's price for such equipment is $6,445,-000 for the total 52,000 establishments.

The average life of such equipment is estimated at 10 years and the normal replacement rate at 10% per annum.

(2) OVER $10,000 ANNUAL SALES

Statistics reveal 44,000 independent cafeterias, restaurants, and lunch rooms doing an annual business over $10,000. The Committee estimated the size and type of refrigeration equipment installed in such establishments and the percentage of the total having such refrigeration, in accordance with the following:

80%—1—reach-in refrigerator with one ⅓-hp. condensing unit.

50%—1—walk-in cooler with one ¾-hp. condensing unit.

10%—1—walk-in cooler with one 1-hp. condensing unit.

80%—1—ice cream cabinet with one ⅓-hp. condensing unit.

75% — 1 — mechanical-type water cooler with one ½-hp. condensing unit.

50%—1—counter-type refrigerator with one ⅓-hp. condensing unit.

Based on present-day prevailing prices, the average manufacturer's price for such equipment is $27,228,-000 for the total 44,000 establishments.

The average life of such equipment is estimated at 10 years and the normal replacement rate at 10% per annum.

(b) CAFETERIAS, RESTAURANTS, AND LUNCH ROOMS (CHAIN)

Statistics reveal 2,826 establishments under this subclassification. The Committee estimated the average size and type of refrigeration equipment installed in such establishments and the percentage of the total having such refrigeration, in accordance with the following:

80%—1—reach-in refrigerator with one ⅓-hp. condensing unit.

50%—1—walk-in cooler with one ¾-hp. condensing unit.

10%—1—walk-in cooler with one 1-hp. condensing unit.

80%—1—ice cream cabinet with one ⅓-hp. condensing unit.

75% — 1 — mechanical-type water cooler with one ½-hp. condensing unit.

50%—1—counter-type refrigerator with one ⅓-hp. condensing unit.

Based on present-day prevailing prices, the average manufacturer's price for such equipment is $1,909,-000 for the total 2,826 establishments.

The average life of such equipment is estimated at 10 years and the normal replacement rate at 10% per annum.

(c) LUNCH COUNTERS AND STANDS

Statistics reveal 62,676 establishments under this subclassification. The Committee estimated the average size and type of refrigeration equipment installed in such establishments and the percentage of the total having such refrigeration, in accordance with the following:

75%—1—reach-in refrigerator with one ¼-hp. condensing unit.

40%—1—ice cream cabinet with one ¼-hp. condensing unit.

40% — 1 — mechanical-type water cooler with one ¼-hp. condensing unit.

Based on present-day prevailing prices, the average manufacturer's price for such equipment is $13,095,-000 for the total 62,676 establishments.

The average life of such equipment is estimated at 10 years and the normal replacement rate at 10% per annum.

(d) SOFT DRINKS, JUICE, AND ICE CREAM STANDS

Statistics reveal 8,051 establishments under this subclassification. The Committee estimated the average size and type of refrigeration equipment installed in such establishments and the percentage of the total having such refrigeration, in accordance with the following:

90%—1—beverage cooler, or ice cream cabinet; with one ⅓-hp. condensing unit.

Based on present-day prevailing prices, the average manufacturer's price for such equipment is $1,115,-000 for the total 8,051 establishments.

The average life of such equipment is estimated at 10 years and the normal replacement rate at 10% per annum.

(e) DRINKING PLACES (FOOD REFRIGERATION ONLY)

Statistics reveal 82,310 establishments under this subclassification. The Committee estimated the average size and type of refrigeration equipment installed in such establishments and the percentage of the total having such refrigeration, in accordance with the following:

80%—1—reach-in refrigerator with one ⅓-hp. condensing unit.

25%—1—walk-in cooler with one 1-hp. condensing unit.

50% — 1 — mechanical-type water cooler with one ⅓-hp. condensing unit.

Based on present-day prevailing prices, the average manufacturer's price for such equipment is $23,170,-000 for the total 82,310 establishments.

The average life of such equipment is estimated at 10 years and the normal replacement rate at 10% per annum.

(f) FOUNTAIN DRUG STORES

Statistics reveal 39,452 establishments under this subclassification. The Committee estimated the average size and type of refrigeration equipment installed in such establishments and the percentage of the total having such refrigeration, in accordance with the following:

90%—1—fountain; 1—back bar and 1—water cooler (mechanical type), with one 1½-hp. condensing unit.

Based on present-day prevailing prices, the average manufacturer's price for such equipment is $16,020,-000 for the total 39,452 establishments.

The average life of such equipment is estimated at 10 years and the normal replacement rate at 10% per annum.

CALUMET AND HECLA CONSOLIDATED COPPER COMPANY
WOLVERINE TUBE DIVISION
SEAMLESS COPPER • BRASS
1411 CENTRAL AVENUE • VINEWOOD 1-5000 • DETROIT 9, MICHIGAN

February 28, 1944

Dear Jobber:

As a jobber you are concerned with copper tube. Your requirements regarding quality and specifications have long been a subject of research and development here at Wolverine. We feel that through these advances we have promoted a long list of "derived benefits" in the jobber field.

High on this list is our control of quality "from ore to finished product". Wolverine Tubing also has three characteristics - it is SOFT, DRY AND CLEAN - vital to you who are engaged in refrigeration.

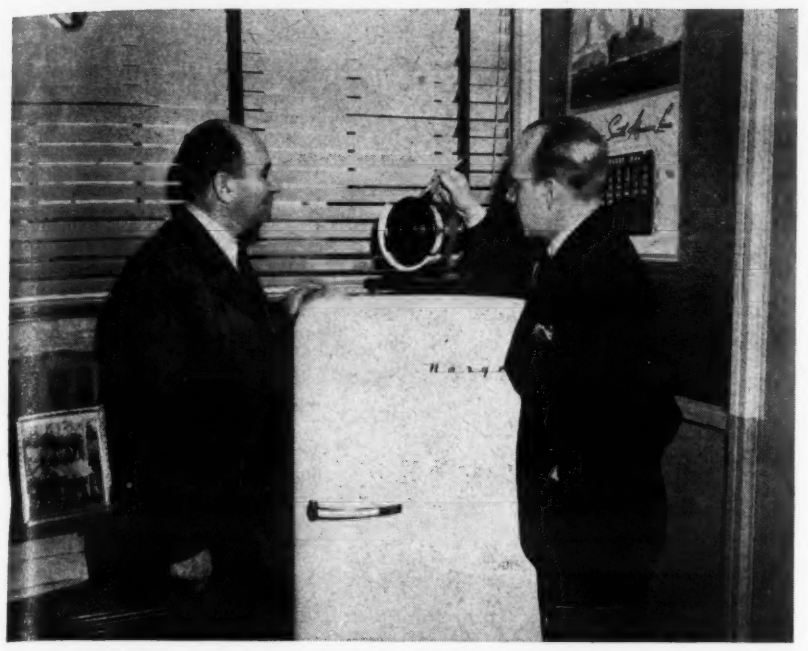
Now that there seems to be a slight easing in the copper situation with respect to war demands, we hope that we shall be permitted to be of greater service to you in the near future.

Yours very truly,

WOLVERINE TUBE DIVISION

FLASH
TO BE RELEASED SOON —AN ADDITIONAL SERVICE IMPORTANT TO THE JOBBER
Watch for it!

Learning the 'North American Way'



Marcos Leizgold (left) who distributes Norge throughout Chile in South America from his headquarters in Santiago, reviews the rollator principle while conferring with Arch Black, export manager of the Norge Division, Borg-Warner Corp. during a recent visit to Detroit to make postwar export plans.

* * *

Japs May Lose South American Markets Because of Atrocities, Chilean Says

DETROIT — Japanese atrocities against American and British prisoners of war have so upset the peoples of Chile and other South American republics that the Nipponese probably never will be able to regain the confidence of these nations after the war, according to Marcos Leizgold of Santiago, Chile, distributor there for Norge division of Borg-Warner Corp.

Mr. Leizgold, who stopped in Detroit to discuss postwar shipments of household appliances to Chile, declared that Axis agents have lost their hold on most of the Latin American countries and that the "good neighbor" policies of Secretary of State Cordell Hull will enable the United States to dominate this trade after the war.

"American manufacturers are doing everything they can to promote friendly relations and we expect to do most of our buying in the United States," Mr. Leizgold added. "We are preparing to buy large quantities of American refrigerators, washers, ranges, and water heaters made in Detroit."

Mr. Leizgold told Arch Black, export manager of Norge, that his company has set up dealers throughout Chile to handle sales of American-made household appliances and that the Chileans are just as anxious to have the postwar convenience as is the American public.

"Chile will buy much larger quantities of electric washers than ever before because of an educational campaign completed by American manufacturers just before the Jap attack on Pearl Harbor," Mr. Leizgold said. "We hope that a definite percentage of American production is rationed to us immediately after plants here are converted."

Conditioning Helps In 'Battle of Banknotes'

PHILADELPHIA — Air conditioning has come to the aid of warfare on still another front marked by the subtle battles between genuine currency and counterfeit money circulated by the enemy to disrupt a country's financial life.

To help the Security Banknote Co. here fill a rush order placed by one of the United Nations for currency printed by the steel plate method, so difficult to counterfeit successfully, paper drying and conditioning equipment was recently installed by Carrier Corp.

By maintaining a constant relative humidity and other requisites for proper paper drying conditions the year around, the paper can be dried on a considerably faster schedule.

The sheets are hung by clips in three layers. The air for drying is discharged downward through nozzles located in a distributing duct running down the center of the room. The ejector effect of the high velocity air from the nozzles sets up a circulation of approximately three times the quantity of air that is delivered from the apparatus.

This type of circulation assures a uniform drying action.

Filtrine
HIGH EFFICIENCY
WATER COOLERS
for
War Plant Cafeterias
Army and Navy Mess Halls
Hospitals
Industrial Applications
QUICK SHIPMENT
Forty years of experience in building special cooling equipment.
Send for complete catalog.
FILTRINE MANUFACTURING CO.
53 Lexington Ave., Brooklyn 5, N. Y.

Appeal Restrictions Dropped by WMC

WASHINGTON, D. C. — Unrestricted right of appeal from decisions of the War Manpower Commission is provided in a revision of its regulation governing appeals, Chairman Paul V. McNutt announced Feb. 15.

The original WMC regulation issued May 22, 1943 specifically indicated those persons entitled to appeal and spelled out under what conditions appeals could be made.

The new regulation, furthermore, extends the right of appeal both to worker and employer affected by a decision made at any step of the appeal process. Both persons involved must be present at the hearing before the area appeal committee or explain absence, but otherwise there are no restrictions on the right to take the case higher.

Other changes in the appeal regulation involve points which experience has shown needed either clarification or minor technical revision. There has been, for example, some confusion on the question of a worker's right to retain new employment obtained on the strength of a statement of availability, if the employer has appealed and it has been finally determined that the statement was erroneously issued.

The revised regulation holds that a statement of availability, once issued, stands. The employer may appeal as a matter of principle or precedent but he cannot demand that the statement of availability be withdrawn or that the worker be required to leave his new employment.

In order to provide a means of reviewing the action of local employment offices before the services of a worker are lost to an employer, the revised regulation provides an optional procedure for temporary suspension of the issuance of statement of availability and making referrals in certain types of cases. The suspension may be for a limited period only, the maximum period allowable being 10 days.

New Appliance Service Firm Set Up In Asheville, N. C.

ASHEVILLE, N. C. — Electric Service & Appliance Co. has been established at 19 Wall St. here to handle servicing of all makes of appliances. M. A. Crompton is service manager.

Columbus Dealers Act To Improve Servicing

COLUMBUS, Ohio—Frank Knoderer of Knoderer's Radio Store has been elected president of the recently formed Associated Radio Service Dealers' Organization of this city.

J. P. Graham of Graham and Colton was named vice president and secretary, and F. R. Gibb of Universal Radio Service was elected treasurer.

Other companies holding membership in the new group include Bexley-Loudner Electric Co., Harvey A. Brower, Buckeye Radio Sales, Clintonville Electric Appliance Store, Evans and Mohr, Gus Grener's Service, Hoermier Music & Electric Appliance, William F. Justus, Long & Stouder, Riebel Appliance Shop, Sears Radio Service, Westgate Electric Shop and Ray Whitehead Radio Service.

The organization's objectives are to provide a guarantee to the public on radio repairs, control quality and workmanship of such repairs, encourage friendly competition, cooperate with the Better Business Bureau to correct any unethical practices and to act as a clearing house for latest information on electronics, television and radio.

CORDLEY
Electric
WATER COOLERS
ALL SIZES FOR SHIPBOARD AND LAND USE
MEET GOVT. SPECS.
CORDLEY & HAYES, NEW YORK, N. Y.

Commercial and Domestic
REFRIGERATOR HARDWARE
NATIONAL LOCK COMPANY
ROCKFORD, ILLINOIS

Artic
(DU PONT METHYL CHLORIDE)
DU PONT
SERVICE NEWS
WAR-TIME NEWS LETTER

Dear Sir:

Your cooperation during the past year has enabled us to serve you reasonably well with Methyl Chloride. We thank you for past help and count on you for the future. Working together will insure satisfactory service.

You will be pleased to know that the container situation is a little better. We are filling most orders promptly. But we don't have a stock of empties on hand, nor does it look as though we'll be able to build up a reserve which will permit us to ship all specified sizes of cylinders, unless the cylinder returns improve rapidly.

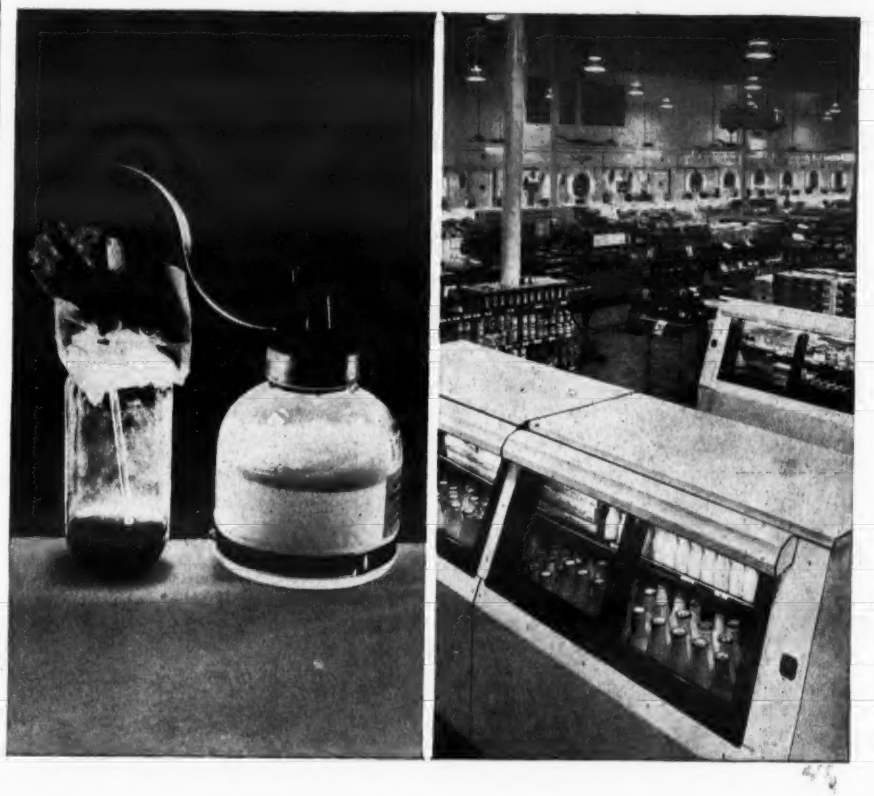
Some customers who refill many small cylinders are using the large drums containing 1200 pounds net of Methyl Chloride, gross weight 2500 pounds, where facilities for handling this large container are available. They find this method convenient, for it permits them to withdraw either gas or liquid without changing the position of the container. Shipment of one or more of these large containers can be made by truck to reasonable distances.

* * * * * * *

The ASRE have had many good conventions, but the recent Philadelphia meeting was one of the best and largest. It featured excellent technical papers by leading refrigeration men, informative sessions, and outstanding speakers who discussed postwar prospects, merchandising programs and Government relationships. If you didn't get there, it will be well worth your while to read the detailed reports which are now being published in the trade journals.

Very truly yours,
Thomas Coyle
THOMAS COYLE
Manager, Chlorine Products Division

BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY



What has blood plasma to do with your food supply?

They both are in the fight for freedom! Blood plasma is worthless unless it is kept at a low, controlled temperature from the time it is drawn from a donor's veins—processed at a laboratory—transported—and held to the period immediately preceding its life-saving injection.

The men, who are entrusted with the responsibility of producing and protecting our food supply, know the vast amount of annual food wastage caused by improper or insufficient refrigeration. They know that the health of both civilians and service men depends upon wholesome food . . . food protected against spoilage and bacteria by proper refrigeration. And they know that a dependable food supply makes possible increased blood donations.

Brunner condensing units and refrigeration equipment are reliably preserving vital blood plasma and perishable foods. Their reliability and efficiency have been proved under the most severe war conditions. Their dependability is a valuable asset to those responsible for the preservation of our food supply whether in large quantities or small.

When confronted with any refrigeration problem, Brunner engineers, experts in the application of all types of refrigeration, will be glad to answer your questions. Naturally, there is no obligation.

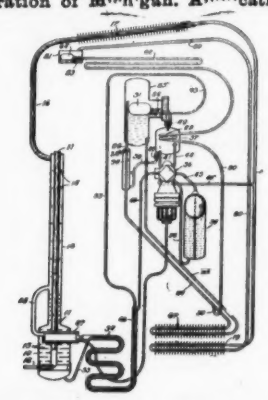
BRUNNER MANUFACTURING COMPANY
UTICA, NEW YORK, U. S. A.

ARMY E NAVY
BRUNNER
For over 36 years the Symbol of Quality

PATENTS

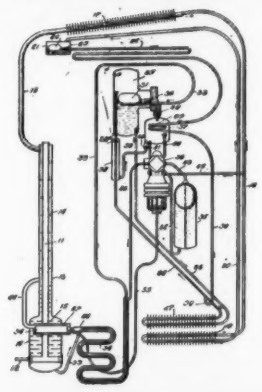
Weeks of Jan. 25 & Feb. 1

2,339,811. ABSORPTION REFRIGERATOR. Joseph N. Roth, Belding, Mich., assignor, by mesne assignments, to Gibson Refrigerator Co., Greenville, Mich., a corporation of Michigan. Application Sept. 28, 1939, Serial No. 296,995. 8 Claims. (Cl. 62—5).



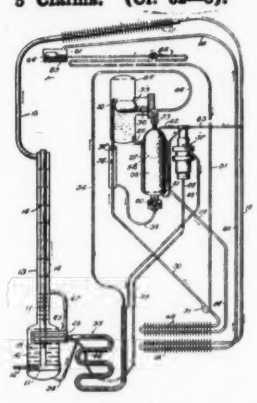
5. In a refrigeration system, temperature responsive control apparatus of the character described, including: a fluid thermostat bulb exposed to temperature variations and adapted to effect a desired control movement when a certain temperature is reached; and a jacket surrounding the bulb and providing a flow path for fluid at a temperature different from that to which the thermostat element is normally exposed, flow through said path being controlled by the thermostat bulb.

2,339,812. ABSORPTION REFRIGERATION APPARATUS. Joseph N. Roth, Belding, Mich., and Ralph E. Schurtz, Kansas City, Mo., assignors, by mesne assignments, to Gibson Refrigerator Co., Greenville, Mich., a corporation of Michigan. Application Oct. 5, 1939, Serial No. 298,110. 20 Claims. (Cl. 62—5).



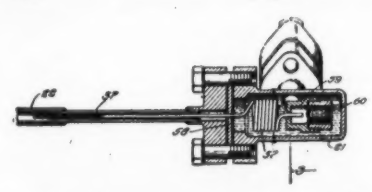
1. Absorption refrigeration apparatus of the character described adapted to provide continuous refrigering effect, including: a still; a condenser, the still and condenser being adapted to operate at high pressure; an evaporator; an absorber, the evaporator and absorber being adapted to operate at low pressure; a transfer chamber adapted to be connected alternately to the still and to the absorber to effect return of liquor from the latter to the former; a pressure chamber in the connection between the transfer chamber and the absorber for subduing the rush of fluid from the transfer chamber when it is connected to the absorber; and operative connections between the elements of the apparatus.

2,339,814. CONTINUOUS ABSORPTION REFRIGERATOR. Joseph N. Roth, Belding, Mich., assignor, by mesne assignments, to Gibson Refrigerator Co., Greenville, Mich., a corporation of Michigan. Application March 27, 1940, Serial No. 326,292. 5 Claims. (Cl. 62—5).



3. Absorption refrigeration apparatus of the character described adapted to provide continuous refrigerating effect, including: a still; a condenser, the still and condenser being adapted to operate at high pressure; an evaporator; an absorber, the evaporator and absorber being adapted to operate at low pressure; a transfer chamber for effecting return of liquor from the absorber to the still; vapor and liquid connections between the chamber and the still; transfer valve means including valves controlling each of said connections, said valves being interconnected and movable together to permit simultaneous flow in both connections for a period and simultaneously block flow in both connections for a period; a connection between the transfer chamber and the absorber including a check-valve preventing flow of fluid from the former to the latter; a conduit connecting the still directly to the transfer chamber to deliver weak liquor thereto; and control means for the transfer valve means; whereby the transfer chamber is refilled rapidly and its pressure rises rapidly to that of the still to maintain balanced pressures on the transfer valve means for the major portion of each transfer cycle.

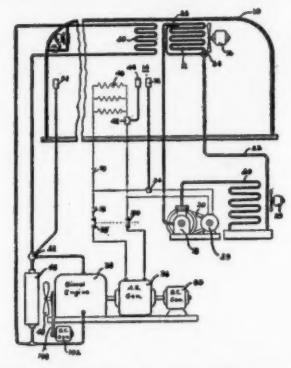
2,339,815. EXPANSION CONTROL. Joseph N. Roth, Belding, Mich., assignor, by mesne assignments, to Gibson Refrigerator Co., Greenville, Mich., a corporation of Michigan. Application Oct. 17, 1940, Serial No. 361,629. 9 Claims. (Cl. 62—5).



6. Apparatus of the character described for controlling delivery of refrigerant from a high pressure portion to a low pressure portion of a refrigeration system, including: a capillary tube through which the refrigerant flows; a receiving chamber into which one end of the tube opens; and means for delivering liquid refrigerant and warm refrigerant vapor from the chamber, a substantial portion of the tube lying with the chamber and adapted to be at least partly immersed in liquid refrigerant therein, the construction and arrangement being such that the liquid and vapor separate in the chamber so that the immersion varies with the amount of liquid in the chamber and the part not immersed is in contact with the warm vapor to receive heat sufficient to gasify at least part of the liquid refrigerant therein, the other end of the tube being located substantially out of heat exchange relation with the chamber.

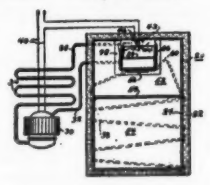
2,339,903. REFRIGERATING APPARATUS. Donald F. Alexander, Dayton, Ohio, assignor to General Motors Corp., Dayton, Ohio, a corporation of Delaware. Application Oct. 24, 1940, Serial No. 362,637. 10 Claims. (Cl. 257—3).

5. Air conditioning apparatus comprising in combination, an evaporator, means for circulating air to be conditioned in thermal exchange with said evaporator, a condenser, a compressor, refrigerant flow connections between said evaporator, condenser and compressor, a motor for driving said compressor, temperature responsive means for starting and stopping said compressor motor, a power source, a first generator operated by said power source, a second generator operated by said power source for exciting the field of said first generator, electrical means energized from said second generator, voltage regulating means for controlling the voltage output of said second generator, means



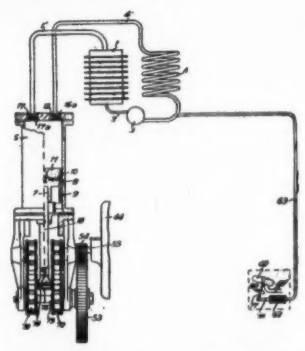
for energizing said compressor motor from said first generator, electric heating means, means for energizing said electric heating means from said first generator, an outside source of electrical energy, means for energizing said compressor from said outside source of electrical energy, and means for disconnecting said compressor motor from said first generator upon energizing of said compressor motor from said outside source of energy, said electrical means energized from said second generator comprising a storage battery and a lighting system.

2,339,944. REFRIGERATING APPARATUS. Paul H. Preble, Concordia, Kan., assignor to General Motors Corp., Dayton, Ohio, a corporation of Delaware. Application Jan. 26, 1940, Serial No. 315,826. 7 Claims. (Cl. 62—115).



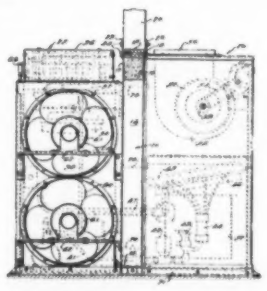
1. Refrigerating apparatus including a closed primary refrigerant circuit and a closed secondary refrigerating circuit adapted to be in contact with the primary circuit, and means for changing the area of contact between the primary and secondary circuits for controlling heat transfer between the circuits.

2,340,034. REFRIGERATING SYSTEM. Otto Zehnder, Granichen, Switzerland, assignor to Gebruder Zehnder, Radiatoren & Apparatebau, Granichen, Switzerland. Application July 12, 1940, Serial No. 345,225. In Switzerland July 12, 1939. 6 Claims. (Cl. 62—4).



1. In a compression refrigerating system comprising piston operated compression means for compressing the refrigerant, an evaporator and a condenser for producing and condensing refrigerant vapor respectively, a piston operated compressor communicating with said evaporator and said condenser through valved suction and pressure conduits respectively, an endless power transmitting device operatively connected with said compressor piston, a pressure switching arrangement associated with said evaporator, a member controllable by said piston for mechanically controlling said switching arrangement, and an electric driving motor, a circuit for said motor connecting it conductively with said switching arrangement and operatively connected with said transmitting device for being driven by said device while said piston performs its suction stroke, by the effect of a rise of pressure in said suction conduit above a predetermined value, and for driving said piston for performing its compression stroke until said piston controls said control member for releasing said switching arrangement for disconnecting said motor.

2,340,164. COOLING UNIT. Burdell S. Williams, Dayton, Ohio, assignor to Chrysler Corp., Detroit, Mich., a corporation of Delaware. Application July 20, 1942, Serial No. 451,569. 1 Claim. (Cl. 62—129).



A portable self-contained refrigerating apparatus adapted to be assembled in and through an aperture formed in a wall of an enclosure to be cooled, comprising a rectilinear panel having front and black walls spaced by heat insulating material, a base under said wall and extending at right angles thereto from both the front and back walls to provide an inverted T framework, an air cooling member positioned on the front wall of the panel wholly within the marginal confines thereof and above said base, said cooling member including a substantially rectilinear housing extending over the adjacent portion of said base, said housing being formed with an upper section, a blower mounted in said upper section, an evaporating coil mounted in the housing below the blower, duct means formed in the housing to admit air below the coil for discharge at the upper section of the blower, a second housing positioned on the back wall of the panel and above its adjacent base, a refrigerant compressor and condenser mounted on the second housing, air flow inducing means mounted on said second housing, and piping interconnecting the evaporator, compressor and condenser through said panel to establish a refrigerating circuit there-between.

137,122. DESIGN FOR AN ICE CUBE TRAY. Joseph A. Gits, Chicago, Ill., assignor.

(Concluded on Page 23, Column 1)

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REFRIGERATION ENGINEERS. Large corporation with tremendous resources, facilities, experience and international reputation, desires competent refrigeration engineers experienced in designing, manufacturing and testing all types of commercial refrigeration equipment. This is an unusual opportunity for qualified men. Give experience and qualifications in replying. Box 1514, Air Conditioning & Refrigeration News.

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SEVENTEEN YEARS' experience refrigeration, commercial and domestic "Commercial Engineer" now, and last 10 years service and sales manager for company selling complete line of domestic and commercial appliances. 37 years of age, draft 4F. Intelligent, above average ability. Will consider only connection with progressive company. Box 1522, Air Conditioning & Refrigeration News.

SALES ENGINEER: Experienced application-sales, installation of air conditioning, refrigeration and heating equipment. Is desirous of obtaining representation of factory lines for present and postwar. Familiar with and now handling priority business New York, New Jersey. Correspondence invited. Box 1524, Air Conditioning & Refrigeration News.

SELLING OUT service business, nine years present location servicing and installing commercial refrigeration and air conditioning, all makes. 39 years of age. 3A(H) classification with over 15 years' refrigeration service. References. Will begin work May 1-15. State salary and working conditions. Loyd Adcock, Box 795, Corpus Christi, Texas.

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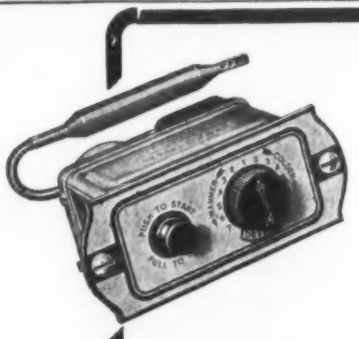

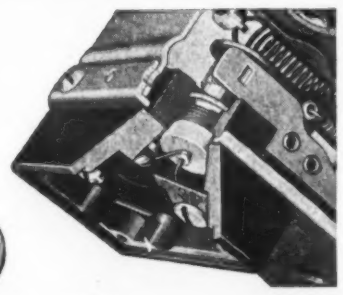

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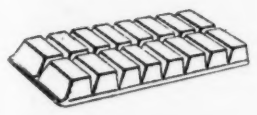
Patents (Cont.)

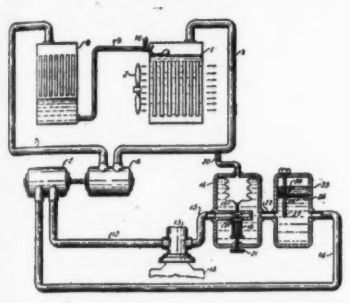
(Concluded from Page 22, Column 5)

signor, by mesne assignments, to himself and Jules P. Gits, Chicago, Ill. Application Nov. 12, 1941, Serial No. 104,123. Term of patent 14 years.



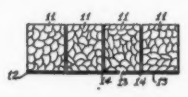
The ornamental design for an ice cube tray, substantially as shown.

2,340,292. AIR CONDITIONING SYSTEM. Leslie L. Aspelin, Ewell C. Phillips, and Ralph E. Grey, Dayton, Ohio. Application April 12, 1941, Serial No. 388,244. 4 Claims. (Cl. 62—129). (Granted under the act of March 3, 1883, as amended April 30, 1928; 370 O. G. 757).



1. In a refrigeration system including a compressor, a condenser and an evaporator, hydraulic means for continuously driving said compressor and means for controlling the rate of flow of fluid in the said hydraulic means to control the operation of the compressor in response to the pressure of the refrigerant in the evaporator including a balanced metering valve controlled by the pressure of the refrigerant leaving the evaporator.

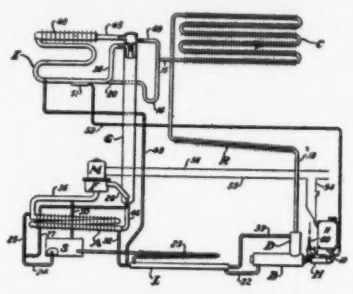
2,340,337. PERISHABLE MARK FOR QUICK-FROZEN FOODS. Robert P. McNaught, San Francisco, Calif., assignor of one-third to Catherine Marie Bastian and one-third to Ada Ann McNaught, San Francisco, Calif. Application April 25, 1939, Serial No. 269,916. 3 Claims. (Cl. 99—192).



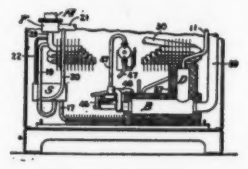
1. A comestible comprising a food product in plural form, each unit in the form being in a rigid state due to freezing, and an initially liquid but ultimately frozen substance interconnecting the units and covering at least a portion of one side of each unit for binding the units in interconnected mass formation but responding to breaking at connected places between units, said substance forming one of the principal or flavoring ingredients for the edible product when thawed and consisting of an edible anti-freeze solution meltable at a temperature near zero Fahrenheit, thus constituting a tell-tale mark, the substance having marked or impressed thereon when in a frozen state at each one of the units a symbol which will lose its identity when the temperature exceeds a predetermined point.

2,340,408. REFRIGERATION. Justice H. Beach, Canton, Ohio, assignor to the Hoover Co., North Canton, Ohio. Application Dec. 30, 1940, Serial No. 372,225. 19 Claims. (Cl. 62—5).

1. The method of heating an absorption refrigeration apparatus of the type having a refrigerant generator, a main burner and a pilot burner operatively associated therewith which comprises, heating said generator by said main burner and said pilot burner upon a demand for refrigeration, discontinuing the fuel supply to said main burner when the demand for refrigeration has been satisfied, and continuing the fuel supply to said pilot while discontinuing the heating of said generator by said pilot so long as there is no demand for refrigeration.

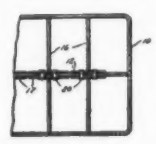


2,340,414. REFRIGERATION. Curtis C. Coons, North Canton, Ohio, assignor to the Hoover Co., North Canton, Ohio, a corporation of Ohio. Application July 8, 1939, Serial No. 283,357. 19 Claims. (Cl. 62—5).



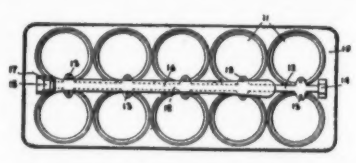
1. Absorption refrigerating apparatus comprising an inert gas circuit including an evaporator and an absorber, a solution circuit including a boiler and said absorber, power driven means for circulating the inert gas through said inert gas circuit, a fuel burner arranged to heat said boiler, fuel supply means for said burner, electrical igniting means for said burner, refrigerating demand responsive means for controlling the energization of said power driven inert gas circulator and of said electrical igniting means, and means controlling said fuel supply means arranged to be operated to fuel supplying condition only when said igniting means has been energized by said refrigeration demand responsive means.

2,340,674. ICE CUBE TRAY. Logan L. Mallard, Norfolk, Va. Application Aug. 22, 1940, Serial No. 353,728. 10 Claims. (Cl. 62—108.5).



1. In a grid for an ice tray, a series of segments pivotally connected to each other forming a longitudinal partition, a series of transverse partitions mounted for pivotal movement on the upper portion only of said longitudinal partition and forming with said longitudinal partition and the tray a series of freezing cells, means for limiting the relative movement between segments of said longitudinal member, and means engaged by said first named means for limiting the pivotal movement of said transverse partitions.

2,340,675. FREEZING TRAY WITH ICE RELEASE. Logan L. Mallard, Norfolk, Va. Application Dec. 4, 1941, Serial No. 421,642. 8 Claims. (Cl. 62—108.5).

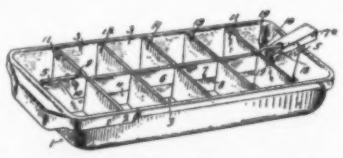


1. A tray for use in the freezing unit of a refrigerator comprising a frame having a series of spaced rounded freezing compartments therein, an actuator bar extending longitudinally of the tray between said compartments and having a free end slidably connected to the frame and a lever pivotally connected to the opposite end thereof whereby when the lever is actuated the said bar is moved backwardly and forwardly along the frame, and a series of prongs rigidly connected to said bar and projecting downwardly into the freezing compartments to be embedded in the ice mass, said prongs being eccentrically located with respect to the axes of the said freezing compartments.

2,340,676. INDIVIDUAL FREEZING CUP WITH ICE RELEASE. Logan L. Mallard, Norfolk, Va. Application Dec. 4, 1941, Serial No. 421,644. 6 Claims. (Cl. 62—108.5).

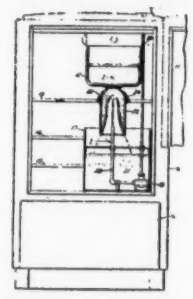
1. In combination with a container having a rounded freezing chamber, ice-dislodging means comprising an annular centrally open member rotatably mounted on the top of the container and carrying a fixed downwardly-projecting finger or stud to be embedded in the ice mass resulting from the freezing of a fluid in said chamber, said finger being eccentrically disposed with respect to the axis of the chamber whereby, when relative rotation is imparted to the container and said member, the ice mass is dislodged from said chamber.

2,340,693. ICE CUBE RELEASE DEVICE. Julius Roberts, Brooklyn, N. Y., assignor to General Motors Corp., Dayton, Ohio, a corporation of Delaware. Application Jan. 29, 1936, Serial No. 61,282. Renewed Oct. 12, 1937. 15 Claims. (Cl. 62—108.5).



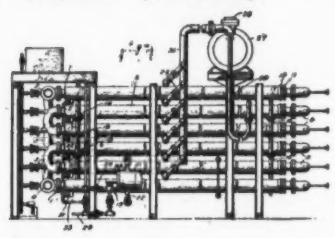
15. In combination with an ice tray, a grid including a lower section forming a longitudinal dividing wall in the tray and an upper movable section both removable from the tray, said grid having a plurality of substantially inflexible transverse partitions extending across the interior of the tray through the plane of one of said sections and removable therefrom with said grid sections, and a detachable lever engaging each of the sections of said grid and operable independent of contact with the tray for applying force between said sections to move the movable section of the grid relative to the other section thereof and to cause relative movement between the transverse partitions.

2,340,721. APPARATUS AND METHOD FOR PURIFYING WATER. Willis R. Whitney, Schenectady, N. Y., assignor to General Electric Co., a corporation of New York. Application Oct. 5, 1942, Serial No. 460,767. 7 Claims. (Cl. 62—124).



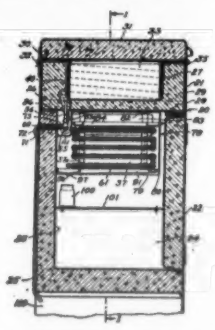
1. The method of producing substantially a pure solvent component from a solution which consists in projecting a jet of said solution while at a temperature approximating the freezing point thereof into contact with a surface which is maintained at a temperature sufficiently low to cause a portion of a liquid component to freeze thereon, so distributing a stream of excess solution over the surface of frozen component to cause it to be continually washed, and maintaining the velocity of said stream with respect to the rate of freezing sufficiently high to prevent occlusion of impurities in said frozen component.

2,340,759. DOUBLE PIPE CHILLER. Benjamin P. Kubaugh, Louisville, Ky., assignor to Henry Vogt Machine Co., Inc., Louisville, Ky., a corporation of Kentucky. Application Nov. 2, 1942, Serial No. 464,230. 5 Claims. (Cl. 62—141).



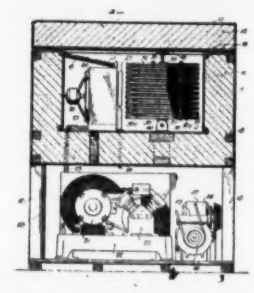
1. Double pipe chiller comprising a serpentine coil in the form of a bank of superposed jacketed straight horizontal pipe sections, serially connected at opposite ends providing a conduit for the flow of liquid to be cooled, means serially connecting said jackets at both ends, said means including overflow pipes establishing communication between each jacket and the one next below having their upper ends above the bottom of the higher jackets whereby a liquid level is established in each jacket, means communicating with the top jacket for supplying liquid refrigerant to said jackets and a gaseous refrigerant outlet from each jacket at a point adjacent the middle and above the liquid level therein.

2,340,780. REFRIGERATION APPARATUS. Viggo V. Torbensen, Cleveland, Ohio. Application May 26, 1941, Serial No. 395,163. 7 Claims. (Cl. 62—89).



1. In a refrigerator structure, in combination, a casing, an inner shell disposed in said casing and defining a lower chamber therein, an insulating wall between said casing and the side and rear walls and bottom of said shell, a pan disposed in said casing above said shell, the bottom of said pan comprising the top closure of said lower chamber, an evaporator structure attached to the bottom of said pan and depending therefrom in said lower chamber, said evaporator being adapted to provide a mild temperature in said lower chamber, a second evaporator structure in said pan and including an upwardly opening sharp freezing chamber, a body of insulating material of substantial thickness forming an effective heat bar between the inner surfaces of said pan and the sides and bottom of said freezing chamber, an insulated lid on said casing, said lid normally comprising a top closure for said sharp freezing chamber, and a front door on said casing, said door normally comprising the front closure for said lower chamber.

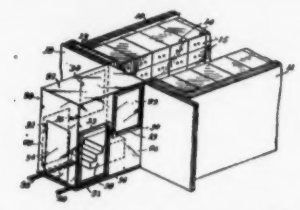
2,340,837. PIEZO CRYSTAL TESTING DEVICE. Richard E. Meeker, Kansas City, Mo., assignor to Temperature Engineering Corp., Kansas City, Mo., a corporation of Missouri. Application Nov. 30, 1942, Serial No. 467,431. 5 Claims. (Cl. 171—327).



1. In a crystal testing device the combination with an insulated enclosure of heating and refrigeration elements in said enclosure, control means for said heating and refrigeration elements, a holder for the crystals in said enclosure including a disc having a plurality of apertures in its circumference for reception of the individual crystals, and electrical connections for testing the individual crystals from the exterior of the enclosure while controlled temperature conditions are being maintained therein.

REISSUE

22,431. FROZEN FOOD LOCKER UNIT. Roland Hoyt Sloan, Jr., Atlanta, Ga., assignor of one-half to Roland Hoyt Sloan, Sr., New Brighton, N. Y. Original No. 2,306,413, dated Dec. 29, 1942, Serial No. 407,962, Aug. 22, 1941. Application for reissue Jan. 16, 1943, Serial No. 472,629. 18 Claims. (Cl. 20—1).



1. A movable cabinet for use between oppositely facing rows of lockers and comprising a cabinet structure mounted to move between said rows and having lateral openings for providing access to said lockers, and sealing means for protecting said openings and the cabinet from the cold air surrounding the cabinet.

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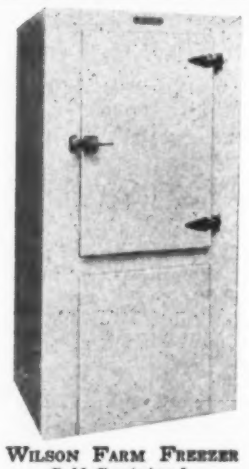
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Self-Contained
Model FR15-HL25
Capacity: 15 cu. ft.
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NORMAL TEMPERATURE WALK-INS & REACH-INS

No Washers Now, But Let's Make Plans, WPB Tells Industry

WASHINGTON, D. C. — Reasons why there can be no early resumption of the manufacture of domestic laundry equipment were given by L. R. Boulware, WPB Operations Vice Chairman, as the fact that surpluses of materials, facilities, and manpower are "spotty" and that small forgings, castings, bearings, and electric motors are still in greatly inadequate supply.

Mr. Boulware also called attention, in his talks with members of the Domestic Laundry Equipment Industry Advisory Committee, to the fact that 800,000 more men will be drafted before the middle of the year and warned that labor shortage is apt to be a controlling factor even after the position in respect to components has eased.

"But we must plan for the future," Mr. Boulware said, "and that is why we have asked you to meet with us to consider some of the problems. While there is no possibility of the resumption of manufacture of washing machines for general civilian distribution in the immediate future, we must nevertheless continue the study we have been making together in these meetings in an effort to arrive at a plan which, when the time does come, will enable the washing machine industry to start up with both the least delay in providing jobs for the then released war workers and with the shortest possible interval between the starting of production and the making of the finished machines available to the general public."

Food Co. Stockholders Expect Frozen Foods

NEW YORK CITY—Nearly a third of the General Foods Corp. stockholders who replied to a recent questionnaire sent out by the company, declared in a question on postwar buying habits that they expected to have either a refrigerator with a frozen food compartment, or a frozen food storage cabinet after the war.

Of those replying 15.9% indicated that they expect to buy a quick-freezing and storage cabinet.

60 Freezing Plants Seen For Tennessee In '44

NASHVILLE, Tenn.—Sixty freezer-locker plants—enough to preserve food for 18,000 families—will be in operation in Tennessee by the end of 1944, estimates Harry Carlton, foods processing specialist with the University of Tennessee Agricultural Extension Service.

Last year two food freezing plants were built in East Tennessee with a combined freezer capacity of 6,000 to 7,000 pounds an hour, pointed out Mr. Carlton, and work has been started on a third plant of similar capacity in Middle Tennessee. In the same section a producer of frozen strawberries is doubling the capacity of his packing lines, Mr. Carlton said.

In 1943 Tennessee packers introduced frozen pumpkin, which made up a 750,000-pound pack, while 3,500,000 pounds of wild blackberries were sent to commercial markets in Eastern United States.

ASSISTANT DEVELOPMENT ENGINEER

Assist in development and testing of small refrigerating equipment.

Engineering degree not necessary if you have had sufficient experience in this field.

Experience in development and/or testing this type of equipment, in connection with manufacture of household refrigerators or ice cream cabinets are essential. Manufacturing experience desirable.

CARRIER CORPORATION
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Production of More Civilian Goods Depends On Success of Invasion, Say Manufacturers

WASHINGTON, D. C.—Relaxation of WPB's stringent policy on production of civilian goods must wait until the approaching Allied invasion of Europe proves that the armed forces' estimates of required military supplies are adequate, say small manufacturers who cite three recent events in WPB:

(1) Resignation of Arthur D. Whiteside as OCR chairman; (2) postponement of the "test-area" plan; and (3) stopping of WPB's program to aid OCR's plans for increased output of consumer items through the use of factories designated by the Smaller War Plants Corp.

WPB officially put the damper on talk of increased civilian goods production with this statement:

"Large-scale relaxations of the controls over production of any civilian items are impossible at this time, when impending military operations may necessitate greatly increased production of war goods, for which manpower, facilities, and materials must be available. Even slight increases in the production of civilian goods cannot be permitted except to meet the most essential needs."

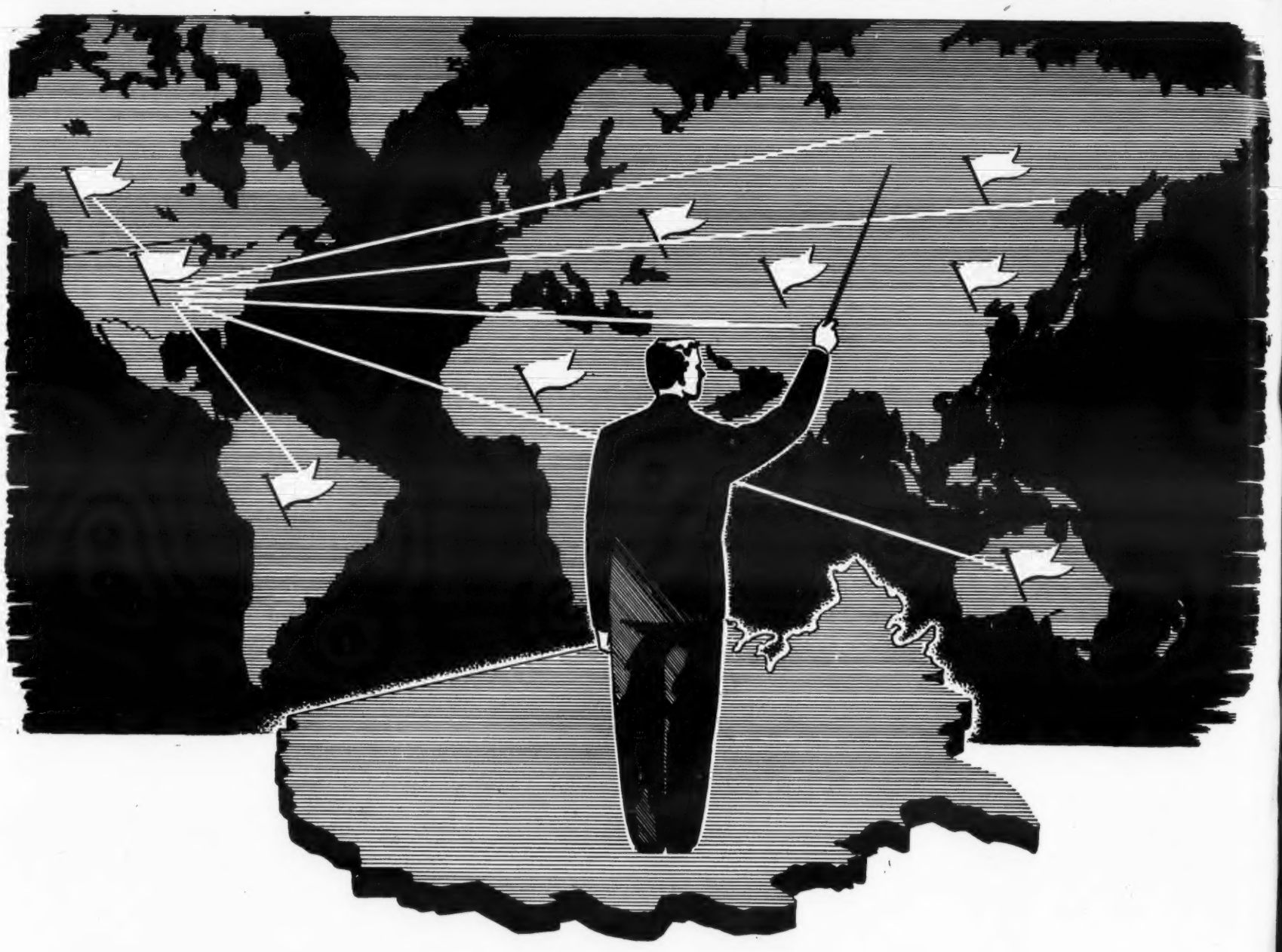
This general statement was issued in connection with a denial by WPB that it is considering resuming in the near future production of innerspring mattresses.

The WPB-SWPC plan to provide "qualified small plants with sufficient material to enable them to bring up their production to the average for the industry as a whole" granted priority relief to plants which had open productive facilities for the manufacture of civilian goods. In operation at the present time, this plan will be dropped in the second quarter of the year, it is reported.

At the present time there are surpluses over military requirements for certain materials, especially aluminum, and it was to utilize these surpluses that WPB had announced its "test-area" plan of permitting small plants in the vicinity of Kansas City, Cleveland, and Philadelphia to produce civilian goods. Besides using surplus materials this plan was to test the feasibility of gradually resuming production of consumer items without interfering with war production.

This plan has been postponed due to early publicity and the wishes of military officials, it is said.

One manufacturer believes that WPB's proposal for resumption of flat iron production has been delayed, pointing out that as yet WPB has made no allocations, written any orders, or selected any manufacturers.



PLANNING YOUR POST WAR MARKETS

The old world . . . exhausted . . . depleted . . . after the war will look to us for help. There'll be a tremendous export field open to American refrigeration. But even if the old world sank beneath the sea our own home market would keep us all humping. What a vista will be unveiled when Peace descends upon a harried world!

Wayne Carver of LOCKER PUBLICATIONS predicts the sale of a million home frozen food storage units within two years of the war's end. Retail food merchants and restaurateurs will be in urgent need of display and storage! equipment. Merchants, professional men and office building owners will buy in the 1/3 to 5 ton range. Ice cream cabinets, water, beer and beverage coolers will need our products and services. Industrial refrigeration and air conditioning will be applied more widely in food, metal, synthetic rubber, high octane gasoline and other fields. Expect an explosive demand for "deep freeze" cabinets. All this the day after tomorrow. Are you ready? We're ready to help you.

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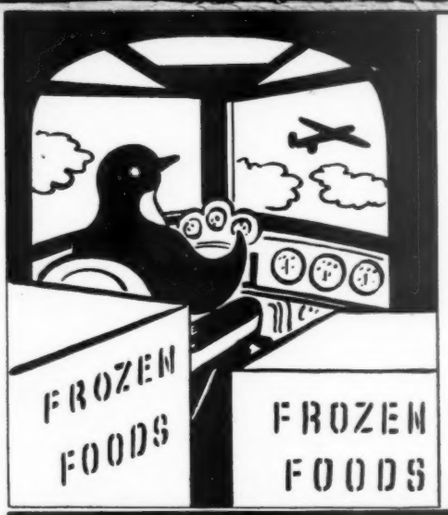

FREIGHT PLANES *for* FROZEN FOOD

A 40 ton payload of refrigerated food at 8c a mile will be carried on a projected plane by Colonial Airlines according to the company's recent announcement. A lateral loading device, permitting 3 1/2 ton containers to be lifted directly from trucks, as block-buster bombs are now handled, will be a feature.

Thus a bright day dawns for refrigeration. The future is so clearly evident that related industries are already laying plans to get on the band wagon.

The Bush Manufacturing Company, Hartford, Connecticut . . . 415 Lexington Avenue, New York . . . 549 W. Washington Blvd., Chicago.

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BUSH HEAT TRANSFER PRODUCTS

Air Conditioning & REFRIGERATION NEWS

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